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EXPLORING THE CLINICAL UTILITY OF MOBILE APPLICATIONS FOR PROMOTING AFFECT REGULATION AMONG CLIENTS WITH BEHAVIORAL HEALTH PROBLEMS

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Abstract

Nearly 25 percent of adults in the United States are diagnosed with a behavioral health condition, most commonly depression, anxiety disorders and substance use disorders. Each of these diagnoses is associated with significant disruptions in affect regulation which encompasses the capacity to up and down regulate emotions. Best practice treatment for these conditions includes psychotropic medications combined with individual or group-based psychotherapeutic modalities which regardless of the therapist's theoretical orientation attempt to promote affect regulation through skill transfer and strategies for observing one's ability to regulate emotions. Similarly, attention to regulatory capacity is central to many emerging self-help technologies involving smart phone applications. These technologies encourage users to observe, track, and offer strategies for regulating feelings through sleep, exercise, nutrition, alcohol use and many others. However, while anecdotally reported, few studies have examined the ways in which smart phone applications are incorporated into psychotherapy. In response, the current exploratory study used focus groups comprised of masters prepared behavioral health clinicians (N=25) to examine the appropriateness, accessibility, practicality and acceptableness of smart phone technologies as an adjuvant tool in the clinical setting. More specifically this study explored the use of technology to promote self-observation, skill transfer and subsequently affect regulation. Results suggested clinicians frequently use smart phone technologies in their practice and find these applications to be appropriate for tracking a range of symptoms (e.g. mood, substance use, sleep disruptions) and for promoting coping skills (e.g. meditation applications). Clinicians also reported these applications were fairly accessible and practical for use. Results indicated clinicians are judicious in their use of smart phone applications based on the client's developmental needs and their particular symptom presentation. While these technologies were deemed effective, accessible and practical, focus group participants were wary of the impact of technology on society and the developing mind, citing that overuse of technology could promote an exacerbation of social isolation and loneliness. Further, practitioners reported that use of technology in psychotherapy could disrupt the interpersonal relationship in treatment. Respondents also reported they were unclear how to vet applications and desired additional training on their use in treatment. In conclusion, while smart phone applications were used and helpful for promoting affect regulation, future research needs to further examine best practice strategies for integrating smart phone applications into psychotherapeutic treatment, as well as refine technologies to fit more closely with the goals of psychotherapy.

Keywords: Technology, Mobile Applications, Affect Regulation, Clinical Utility

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**EXPLORING THE CLINICAL UTILITY OF MOBILE APPLICATIONS FOR
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BEHAVIORAL HEALTH PROBLEMS**

Caroline Fenkel MSS, LCSW

A DISSERTATION

in

Social Work

Presented to the Faculties of the University of Pennsylvania

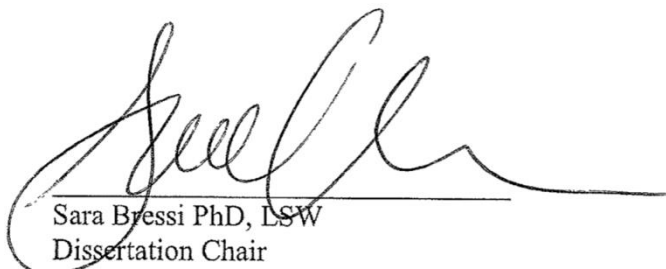
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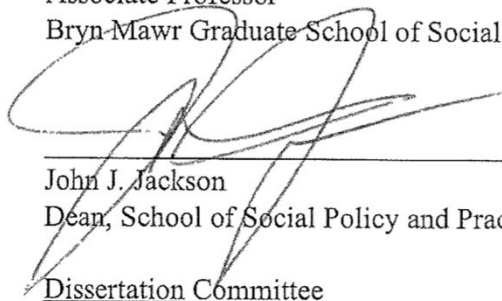
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Dedication

This dissertation is dedicated to my loving parents, Mary and Joe Fenkel. Despite being told by “experts” that their daughter had a severe learning disability and would be incapable of “mainstreaming,” my parents fought with sweat and tears to give me the opportunity to learn in an alternative setting. Without them, I would probably be working in a factory doing manual labor, just like the “specialists” predicted. Thank you for ignoring the “expert’s opinion” and providing me the opportunity to be challenged, to fail/fall and to get back up on the horse again, and again. And to all of those “specialists” and “experts” out there, I hope one day, we can live in a world where we realize that kids like me did not fail out of the system but the system failed us. More importantly, to all of those struggling kids out there, remember, that which doesn’t kill us, makes us stronger. Failure is the key to success.

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I would also like to acknowledge Dr. John Jackson for opening up the door in his first introductory speech during the Doctorate of Social Work Orientation at the University of Pennsylvania. Dr. Jackson's simple invitation to visit him in his office to discuss alternative types of dissertations motivated me to begin to think innovatively about the relevant topics I was interested in related to technology and social work.

Dr. Eli Muhrer's late night conversations about technology and its lack of integration into mental health care is yet another necessary acknowledgement. Eli's consistent reassurance throughout the dissertation process, always providing the "big picture" to help inspire the continuation of writing even with a prominent writer's block.

To my beloved partner, Mike, as I write this, you are sound asleep next to me, putting up with my loud typing after a long day of me begging for caffeine requiring multiple coffee shop runs, listening to me huffing and puffing at the computer screen and complaining to you about writer's block, APA formatting and Dr. Bressi's omission of a large percentage of content through each edit. Despite days like this where we are both enveloped by my dissertation stress, you believed in me enough to support me through this program. You are my rock, all in.

And of course, last but certainly not least, my beating heart with fur and legs (Gibson, 2013), Sir Graham Cracker McFenkel. My next study will be addressing how weight of a dog's head on your arm can motivate and inspire you to write a whole dissertation and more importantly, will explore how the simple scent of our four-legged children can be an affect regulatory strategy. I find myself gazing into your eyes when I am dysregulated and I am instantly catapulted into regulation. You sir, will be my next dissertation. Your love is immeasurable, your heart is giant and you are my #1. I will always try to be the person you think I am.

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ABSTRACT

EXPLORING THE CLINICAL UTILITY OF MOBILE APPLICATIONS FOR
PROMOTING AFFECT REGULATION AMONG CLIENTS

Caroline Fenkel

Sara Bressi PhD, LSW

Nearly 25 percent of adults in the United States are diagnosed with a behavioral health condition, most commonly depression, anxiety disorders and substance use disorders. Each of these diagnoses is associated with significant disruptions in affect regulation which encompasses the capacity to up and down regulate emotions. Best practice treatment for these conditions includes psychotropic medications combined with individual or group-based psychotherapeutic modalities which regardless of the therapist's theoretical orientation attempt to promote affect regulation through skill transfer and strategies for observing one's ability to regulate emotions. Similarly, attention to regulatory capacity is central to many emerging self-help technologies involving smart phone applications. These technologies encourage users to observe, track, and offer strategies for regulating feelings through sleep, exercise, nutrition, alcohol use and many others. However, while anecdotally reported, few studies have examined the ways in which smart phone applications are incorporated into psychotherapy. In response, the current exploratory study used focus groups comprised of masters prepared behavioral health clinicians (N=25) to examine the appropriateness, accessibility, practicality and acceptableness of smart phone technologies as an adjuvant tool in the clinical setting. More specifically this study explored the use of technology to promote self-observation, skill transfer and subsequently affect regulation. Results suggested clinicians frequently use smart phone technologies in their practice and find these applications to be appropriate for tracking a range of symptoms (e.g. mood, substance use, sleep disruptions) and for promoting coping skills (e.g. meditation applications). Clinicians also reported these applications were fairly accessible and practical for use. Results indicated clinicians are judicious in their use of smart phone applications based on the client's developmental needs and their particular symptom presentation. While these technologies were deemed effective, accessible and practical, focus group participants were wary of the impact of technology on society and the developing mind, citing that overuse of technology could promote an exacerbation of social isolation and loneliness. Further, practitioners reported that use of technology in psychotherapy could disrupt the interpersonal relationship in treatment. Respondents also reported they were unclear how to vet applications and desired additional training on their use in treatment. In conclusion, while smart phone applications were used and helpful for promoting affect regulation, future research needs to further examine best practice strategies for integrating smart phone applications into psychotherapeutic treatment, as well as refine technologies to fit more closely with the goals of psychotherapy.

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CHAPTER 1: INTRODUCTION

Problem Statement

One in four adults in the United States are diagnosed with a behavioral health condition and treatment of these disorders costs nearly 58 billion dollars annually (AHRQ, 2006). The most commonly diagnosed and treated behavioral health conditions include major depression, anxiety disorders and substance use disorders (Grohol, 2017; Kessler et al., 2003). Each of these disorders is associated with a range of biological, social and psychological risk factors and envelop nearly all aspects of functioning including physical health (Evans, 2005), financial stability (Coryell et al., 1990; Kessler et al., 2006), and interpersonal relationships. In addition, each of these major mental disorders is characterized by disruptions in affect (Hill, 2015).

Affect is a term to describe emotional processes within the body in reaction to a stressor or stimulus in the environment. One's ability to regulate affect, or to modulate emotional states (e.g., increase feelings, or decrease feelings) is in part wired in childhood through interactions with attachment figures. As an outcome of attachment, affect regulation is foundational to creating a healthy, sustainable and well-adjusted lifestyle. Mood, anxiety and substance abuse disorders are essentially the presentation of dysregulated affect through noticeable symptoms such as depressed mood or social isolation. Some symptoms of these disorders, in particular, substance abuse, are strategies developed to modulate dysregulated emotions. However, these symptoms while helping to avoid, increase or decrease feelings, further limit functioning.

Best practice treatment for these conditions includes psychotropic medications combined with individual or group-based psychotherapeutic modalities, delivered on short

and long-term bases, in inpatient and outpatient settings. In outpatient settings, under the cost-reduction strategies of managed mental health care (Huber, 1997), clients typically access weekly 50 to 60-minute individual psychotherapy sessions. In higher levels of care, such as partial hospitalization programs, and intensive outpatient treatment programs, patients may access two 50-minute psychotherapy sessions per week alongside group treatment and adjuvant therapies (Larivière, 2011). As such, therapeutic staff are faced with the challenge of advancing symptom reduction, and psychological, social, and physical changes with limited time and resources.

Affect regulation is often assessed by the therapist's observation during psychotherapy sessions of a number of indicators of how feelings are modulated including the patient's relationship to sleep, hygiene, eating patterns, mood states, motivational capacity, and many others. To intervene, regardless of the therapist's theoretical orientation to treatment, all psychotherapies attempt to promote affect regulation through two primary mechanisms; 1.) transfer of skills for up and down regulating feelings and also 2.) in promoting strategies for observing one's ability to regulate affect.

Likewise, attention to regulatory capacity is central to many emerging self-help technologies involving smartphone applications or monitoring devices such as fitness trackers. A host of these technologies observe, track, and offer strategies for regulating feelings through sleep, exercise, nutrition, alcohol use and many others. Recently, literature has emerged that suggests behavioral health settings are open to exploring and using smartphones and other kinds of technology for assessment and interventions. Now more than ever, clinicians are using web-based interventions (Barnes et al., 2003); learning tools (Berry et al., 2003); web-based supervision (Watson, 2003); and computer-

based career counseling programs (Kuo & Srebalus, 2003). Internet-based counseling services are on the rise (Alleman, 2002; Haberstroh, 2009; Mallen et al., 2005). For example, Stuhlmiller and Tolchard (2009) identified several cognitive behavior therapy (CBT) computer-based programs (Beating the Blues©, Fear Fighter©, and MoodGYM©) for treating clients suffering from anxiety and depression. These programs not only enhance the counseling process, but they are also affordable and accessible. A meta-analysis and systematic review conducted by Richards and Richardson (2012) explored different computer-based treatments for depression, their design, communication types employed, alongside various types and frequency of support delivered, reviewing 19 RCTs and 23 published papers, and concluded increased effectiveness of computer-based interventions as compared to usual treatment and improved participant satisfaction. In this way, the technology enabled the interventions to span beyond the therapeutic session and maximize time between sessions.

While technology-based strategies have been investigated for delivery of interventional models in behavioral health, little research has examined the clinical utility of incorporating smartphone technologies into the two major components of traditional models of psychotherapy, namely the promotion of observation of affect regulation and skill transfer of coping strategies for affect regulation. Clinical utility is a concept recently further developed by Smart (2006) which examines the usefulness of any novel intervention or innovation through a multi-dimensional lens. The model evaluates four factors in the expert clinical opinion of the appropriateness, accessibility, practicality, and acceptableness of a new intervention (Smart, 2006). These components are essential for

clinicians to adopt any new modality. Without clear clinical utility, there is no incentive for clinicians to integrate the intervention into their practice.

Purpose of the Study

In light of the dearth of exploratory research on incorporating smartphone applications into psychotherapy, and the clinical centrality of affect regulation as a target of psychotherapeutic treatments, research is needed to examine the clinical utility of smartphone technologies as strategies for psychotherapists to promote observation of skills for regulating affect. As such, this exploratory study uses focus groups with trained psychotherapists to study the following specific aim;

To examine clinicians' perspectives on the clinical utility of incorporating existing mobile smartphone technologies into psychotherapeutic treatment with persons with behavioral health conditions for enhancing affect regulation. Applying Smart's model, the study will examine the accessibility, practicality, acceptableness, and appropriateness of these mobile technologies into psychotherapeutic practice.

Research Questions

Based on the specific aim of this proposed research, and a review of the literature, four exploratory research questions guided by Smart's (2006) conceptual have emerged and are as follows: Based on the experiences of trained psychotherapists,

- 1.) What is the perceived appropriateness of using smart phone technologies as a means to help clients self-observe emotional regulatory markers and practice new skills?
- 2.) What is the perception of clinicians regarding the ability of clients seeking outpatient mental health counseling to access smartphone technology?

- 3.) What is the perception of clinicians on the practicality of integrating smart phone technologies for promoting affect regulation in everyday practice situations?
- 4.) What are the moral or ethical concerns for practicing clinicians in considering use of these technologies for helping with affect regulation?

CHAPTER 2: LITERATURE REVIEW

Disorders

Mood, anxiety and substance use disorders are pervasive and associated with increased societal and personal expenditures (Grant, 1995; Kessler et al. 1996). The cost of these disorders is not time-limited. Instead, longitudinal research including numerous clinical trials (Hirshfield et al. 1990; Merikangas et al. 1998; Svanun et al. 1989; Swedson et al. 2000; Hasin 1997) and national epidemiological surveys (Grant, 1995; Kessler et al. 1996) consistently demonstrate the negative impacts of these disorders span the lifetime.

Anxiety Disorders

Epidemiological studies indicate the high prevalence of anxiety-related disorders in the United States (Martin, 2003; Dickey, 1997). Anxiety disorders are associated with fear, nervousness, apprehension, and panic as well as physical symptoms including cardiovascular, respiratory, or gastrointestinal symptoms (Rakel, 1981). Phobias are the most common, followed by panic disorder, obsessive-compulsive disorder, and generalized anxiety disorder (Martin 2003). Individuals between ages 24 to 44-years-old are the cohort that experiences the highest rate of these disorders (Martin, 2003). The Epidemiological Catchment Area (ECA) survey is the most well-known study which studied the general population of five American states, and it stressed the high rate of co-morbidity of anxiety with other psychiatric disorders (ECA, 1990).

Mood Disorders

A major depressive disorder is among the most commonly diagnosed mental disorder with approximately one in six adults experiencing an episode within their lifetime (Kessler et al., 2003). Depression envelopes nearly all aspects of life including

physical health (Evans, 2005), work and income (Coryell et al., 1990; Kessler et al., 2006). The World Health Organization (WHO) has ranked depression the fourth leading cause of disability worldwide predicting that by 2020 it will be the second leading cause of disability (Murray et al., 1996). Kessler (2013) points out the socio-demographic correlates of major depression and found low education, high teen child-bearing, marital disruption, and unstable employment as crucial risk factors for major depression. Many who struggle with depression tend to self-medicate and emotionally regulate with the use of drugs or alcohol.

Substance Use Disorders

Recent findings from several nationally representative samples suggest that the lifetime alcohol use and drug use disorders prevalence is approximately 8 percent and 3 percent, respectively (Merikangas et al., 2010; Swendsen et al., 2011). However, these numbers could be drastically under representative given the emergence of the opiate epidemic in the United States which most frequently starts with opioids that are prescribed by physicians. Abuse of prescription pain medication and other opioids resulted in 28,000 deaths nationally in 2014 (CDC, 2016). Besides this high rate of lethality, the treatment, and associated health care costs of opioid drug abuse, dependence and death are estimated to be 78.5 billion dollars annually (Florence et al., 2016).

Affect Regulation

A core organizing feature of each of the major behavioral health problems reviewed above is a disruption in the regulation of affect or emotional processing. Hill (2015) suggests that emotional processing is optimized when we feel safe, and that regulated affect optimizes the capacity for flexibility and creating adaptive responses to the changing

demands of the environment (Schore 1994, 2003a, 2003b, 2012) and thus is foundational for optimal functioning. Affect is a response to the environment, and when affect is regulated the organism can respond flexibly and adaptively, however, when affect is dysregulated individuals become reduced to reactivity, irritability and automated unhealthy processes (Hill, 2015; Schore 1994, 2003a, 2003b, 2012).

Affect regulation has strong neurobiological underpinnings and its development begins early in the life cycle. The cerebral cortex is divided into the left and right hemispheres, which are connected to each other through a band of tissue called corpus callosum (Carter et al., 2009). The right hemisphere is in a surge of growth from birth to two years of age and is responsible for the perception of non-verbal communication and emotional processing of environmental stimuli. Further, it is directly impacted by the autonomic nervous system which regulates physiological states, such as the fight or flight response to fear (Carter et al., 2009). The left hemisphere is responsible for higher cognitive functions such as language and logic. It begins its growth spurt at eighteen months and becomes the dominant hemisphere at three years of age (Applegate & Shapiro, 2005; Siegel, 2003). To achieve the capacity for affect regulation, the left and right hemisphere of the brain must communicate with one another to have a logical, adaptive reaction to emotional stressors. This communication is achieved through the development of the corpus callosum, making it a key player in affect regulation.

At the beginning of life, the infant perceives the world in sensory experiences to detect safety and threat resulting in a blue print for temperament and affect. This is when the brain's stress response system is formed playing a significant role in the capacity for affect regulation. In a 'good-enough' developmental environment the child feels safe and

therefore can develop adaptive responses to stressors. However, under the threat of trauma and extreme stress, the infant may not develop the necessary skills or capacity to return to affective homeostasis. Often individuals who struggle to regulate affect typically have experienced some form of trauma, be it abuse, neglect, overt trauma or relational trauma. Affect regulatory capacity is built through attachment relationships with caregivers in the early parts of life. “The caretaker’s regulatory deficits are internalized by their infants” (Hill, 2015, p.311). Therefore, if the primary caregiver of an infant is poorly regulated, this can through observation, attunement and mirror neurons be transmitted to the child, creating hard wiring in their brain to be prone to dysregulation. “The primary attachment object may exacerbate rather than ameliorate their dysregulation, creating lifelong consequences” (Hill, 2015, p.570).

Strategies for Regulating Affect

Hill (2015) indicates that becoming dysregulated is part of everyday life. “The capacity to return efficiently to a regulated state maximizes adaptive functioning” (Hill, 2015, p.303) and resilience (Chicchetti, 2010). Persons in psychotherapeutic treatment commonly use the regulatory strategies listed in Table 1, and others, to regulate affect. Regardless of the long-term effects or consequences, these affect regulatory propensities in the moment of use are self-soothing and include strategies such as social media and alcohol consumption.

Affect regulatory strategies are used to modulate mood and affect. These include but are not limited to sleep, physical activity, alcohol consumption, social media consumption, medication, nutrition, and mindfulness techniques. Table 1 reviews the latter affect regulatory strategies.

Through a multitude of studies, sleep is a crucial indicator of mood with lack of sleep resulting in irritability and labile moods (Riemann et al. 2001; Jankowski, 2014). Furthermore, many seek out sleep as an affect regulator-when feeling overwhelmed, many use sleep to tolerate and modulate the dysregulation. Physical activity is yet another affect regulator with many people reporting that they go to the gym to help with stress from work or relationships (Craft et al., 1998; Cooney et al., 2013; Daley, 2008; Danielsson et al., 2013; Josefsson et al., 2014; Krogh et al., 2011; Rethorst et al., 2009; Silveira et al., 2013; Stathopoulou et al., 2006; Hallgren et al., 2016; Schuch et al., 2016). Alcohol consumption is exhibited by many adults coming home and making a statement such as “I need a glass of wine, to unwind.” These statements are made throughout households in the United States, and further illustrate the soothing nature of alcohol to help regulate affect (Kuntsche et al., 2005; Brennan et al., 1986a; Brennan et al., 1986b). Social media consumption often is categorized as a place where people can go to “check out” and take their thoughts off their mood or anxiety (Primack et al., 2009; Lin et al., 2016). This can often lead to feelings of stability and self-soothing. However, some research has indicated that social media consumption has the consequence of dysregulating affect with a number of studies showing a correlation between longer social media exposure to greater feelings of depression (Primack et al., 2009). Use of psychotropic medications is a crucial indicator of affect regulation, with the goal to regulate affect and when individuals choose not to take their medication or forget, it can lead to withdrawal, dysregulation and varying mood swings (Aksoy et al., 2016; Scott, 2000; Scott et al. 2002; Dayer et al., 2013). Nutrition is another affect regulator for many; some will feel stressed at work and report eating sugar to help satisfy cravings,

others may restrict food to help manage stress. Regardless of the circumstances, a balanced diet can lead to increased affect regulatory propensity (Akbaraly et al., 2013; Lai et al., 2013; Psaltopoulou et al., 2013; O’Neil et al., 2014; Sánchez et al., 2013). Mindfulness is a leading frontline treatment to help regulate mood and affect with a plethora of studies suggesting its benefits for mood and overall health and wellbeing (Eberth et al., 2012; Kok et al., 2017; Zoogman et al., 2015; Khoury et al., 2013; Klainin-Yobas et al., 2012).

Table 1. Evidence of Affect Regulatory Strategies

Strategy for Affect Regulation	Evidence in reference to mood, anxiety OR substance abuse
Sleep	<p>Historically, symptom criteria related to sleep has been intertwined with most diagnoses in the Diagnostic Statistical Manual having. Sleep frequency, duration and quality are well-illustrated in the literature as a key indicator of mood, with the more sleep one gets the more likely they are to have a more regulated affect.</p> <p>Frank et al. (1997), (1997) Brown et al. (1998) (1996) Schramm et al. (1995) Hohagen et al. (1993) Thase et al. (1998), (2003) Institute of Medicine, (2006) US Department of Transportation, National Highway Traffic Safety Administration, National (2017) Center on Sleep Disorders Research, National Heart Lung and Blood Institute, (2011) Riemann et al. (2001) Jankowski (2014)</p>
Physical Activity	<p>Physical exercise has been shown to be an efficacious treatment for major depressive disorder, with effect sizes ranging from small (−0.4) to very large (−1.4). Neurobiological research suggests that physical activity increases endorphins which decreases depressive symptoms and gives individuals a feeling of joy. Physical exercise also leads to increased energy, weight loss and a potential increase in self-esteem.</p> <p>Craft et al. (1998)</p>

	<p>Cooney et al. (2013) Daley (2008) Danielsson et al. (2013) Josefsson et al. (2014) Krogh et al. (2011) Rethorst et al. (2009) Silveira et al. (2013) Stathopoulou et al. (2006) Hallgren et al. (2016) Schuch et al. (2016)</p>
Alcohol Consumption	<p>Alcohol acts as a depressant on the brain. Therefore, much research has suggested the effects of alcohol and mood, indicating that the more alcohol one consumes the more likely they are to experience depressive symptoms. Kuntsche et al. (2005) Brennan et al. (1986a) Brennan et al. (1986b)</p>
Social Media Consumption	<p>Social media consumption is a newer phenomenon on mood. The rate of social media usage in youth is soaring, yet the research indicates the more social media one consumed leads to increased depression and anxiety specifically in youth in the United States. Primack et al. (2009) Lin et al. (2016)</p>
Medication and Medication Compliance	<p>Medication is a common therapeutic intervention. Psychopharmacology is riddled with many problems from access, to side-effects, yet the one of the largest problems is medication compliance. Is the patient taking the medication they have been prescribed at the right dose, on time and consistently? This question is something that is hard to track. Much research has illustrated that medication compliance is highly correlated with changes in mood. Aksoy et al. (2016) Scott (2000) Scott et al. (2002) Dayer et al. (2013)</p>
Nutrition	<p>Nutrition and mood are highly correlated. Serotonin is the neurotransmitter that mediates mood, regulates sleep and inhibits pain. 95% serotonin is produced in the gastrointestinal tract. The gastrointestinal tract is lined with millions of receptors. Consequently, much research has illustrated: what you eat guides your emotions. Akbaraly et al. (2013) Lai et al. (2013)</p>

	Psaltopoulou et al. (2013) O'Neil et al. (2014) Sánchez et al. (2013)
Mindfulness	Mindfulness focuses on attention placing. Research has suggested that mindfulness can change the brain patterns and can even increase tissue density in key regions. Mindfulness based therapeutic interventions focus on sensations and feelings rather than thoughts, leading to a more experiential intervention. Eberth et al. (2012) Kok et al. (2017) Zoogman et al. (2015) Khoury et al. (2013) Klainin Yobas et al. (2012)

Psychotherapeutic Modalities and Improving Affect Regulation

As discussed, disruptions in affect regulation often result in major mood disorders, anxiety disorders, and substance abuse disorders. While there are many treatment modalities to help this growing population, a frontline professional intervention involves a clinician sitting across from a client engaged in therapy usually for an explicit, singular cross-section in time: one hour per week. However, managed mental health care (MMHC), which arose in the 1980s, has further reduced the scarce time for clients and clinicians to work together. Before MMHC, practitioners determined precisely what services each client required in these weekly sessions and billed the insurances accordingly. Now in the world of MMHC, insurance companies make those decisions. Consequently, service delivery is driven by cost reduction rather than by client needs, which ultimately results in fewer sessions over time (Huber, 1997). With MMHC, many plans only provide 10 to 20 one hour “snapshots” to conceptualize the client and intervene, before the health insurance case managers begin to inquire about medical necessity (APA, 2017). Beyond this, MMHC requires that the interventions be evidence-based, a concept that was transplanted from

medicine into psychology in the 1990s. This change imposed an evidence-based blueprint onto clinical decisions and treatment (Sackett & Rosenberg, 1995).

To address this growing problem, evidence-based treatments like cognitive behavioral therapy (CBT) and psychodynamic psychotherapy treatments are aimed in part towards 1.) helping clients observe their affect, and b.) transferring skills to clients for regulating their affect in the context of distress. These treatment modalities vary in significant ways in that they are based in different theoretical frameworks and are implemented across different time frames. CBT is thought of as a combination of psychotherapy and behavioral therapy and the central tenants include short-term, goal-oriented treatment that takes a hands-on approach to problem-solving (Martin, 2016). CBT introduced the now widespread practice of utilizing out-of-session actions (also referred to as homework). Homework compliance is necessary because it indicates a clients' commitment, motivation, and engagement in therapy (Hubble et al., 1999).

Despite the strong positive correlation between completion of homework and psychotherapeutic outcomes, individuals still struggle to remember or being motivated to do the homework (Scheel et al., 2004). Further, the homework, as well as the clinician's intra-session gathering of data, is based solely on the client's self-report, which is fundamentally biased as it is subject to numerous retrospective confounds, such as recall and misattribution biases (Scheel et al., 2004). One of the methods most commonly used to end this is ecological momentary assessment (EMA; Stone & Shiffman, 1994), a method involving repeated sampling of individual experience in real time and a person's natural environment, so instead of "how did you feel over the past week?" the question becomes "how do you feel right now?" This type of real-time assessment can, in turn,

help clinicians identify factors that may contribute to an individual's symptoms as well as assess if clients are integrating therapeutic learned skills in their everyday life (Roche et al., 2014). Further, the ability to continuously assess, track and analyze these symptoms can aid in the systemic conceptualization of mental health disorders (Wichers, 2014). Thought observation is a large part of CBT as Beck created the term automatic thoughts which refers to emotion-filled thoughts that suddenly arise in the event of stimuli. These automatic thoughts relate directly to affect regulation and are wired in infancy (Marin, 2016; Haggerty 2016).

Psychodynamic therapies are another popular front-line treatment to affect regulatory disorders. Psychodynamic therapy draws from a broad body of literature and theory including a focus on affect and emotion, the influence of past (specifically childhood) experiences, observing past patterns and themes in current relationships, including the relationship between the client and therapist (Gabbard, 2010, Shedler 2010). As described above, in these treatments, much of the affect regulatory deficits are a result of the caregiver-infant attachment (Hill, 2015; Gabbard, 2010). Hill (2015) later illustrates the importance of the therapeutic relationship as a healing strategy. Psychodynamic therapy is a long-term approach which utilizes the therapeutic relationship, helping a client to experience stressful stimuli and then self-regulate. Hill suggests that having a patient focus on stimuli that will typically dysregulate and aiding them through self-regulation is one of "the arts of psychotherapy" (p. 798). Thus, in reviewing the primary emphases of these treatments, each one approaches affect regulation as a central feature of treatment.

Technology and Mental Health Intervention

Because of these leading treatments for this increasing population focus on skill transfer, development of healthy coping skills, and observation of affect regulation behaviors, it has become evident that many of these affect regulators could be tracked through the use of technology. The observation of affect dysregulation between sessions is a significant therapeutic intervention as is the learning of healthy coping skills to build resilience. Given the rise in mobile technology over the past decade, most notably mobile smartphones, it raises the question of whether this technology can be utilized to achieve the above goals of psychotherapy – skill transfer and observation of affect.

As early as 2006 the Institute of Medicine (IOM) began to recognize the rapid evolution of mobile technologies, which has created unique prospects for the collection of personal data in an individualized, granular, unobtrusive and affordable way (Institute of Medicine, 2006; Matthews et al., 2016). The IOM purported that technology that tracks a wide range of elements such as sleep, mood and activity (Li et al., 2010) could have the potential to transform mental health services by providing unceasing and precise individualized patient information related to behavior, symptoms, and medication side effects (Institute of Medicine, 2006). The National Council for Behavioral Health (2014) is advocating for the use of technology in the behavioral health setting, including personalized tools for patients, including patients' individual symptom profiling and real-time assessments (The National Council for Behavioral Health, 2014; Moskowitz, Russell et al., 2009; Trull & Ebner-Priemer, 2013).

Utilizing technology in the behavioral health setting has been explored and is an emerging trend. In a pre-experimental design, researchers (Bush et al., 2013) tested

behavioral screening measures delivered with a smartphone application exploring psychometric properties and user preference. Upon evaluation of the reliability, validity, internal consistency and test-retest reliability on 45 army soldiers, the results illustrated high internal consistency and reliability with the smartphone delivered measures. Moreover, completion of the behavioral screening on the iPhone was much preferred over pen and paper because of its increasing convenience.

Luxton and colleagues (2014) examined stress reduction through a mobile application (Breath2Relax) compared to in-person care exploring cost reduction finding that the cost of in-person care is more expensive than the application once there are over 1500 users. Up until that point, the overhead and start-up costs of the application outweigh the participants seeking in-person care. A popular application was used for veterans going through prolonged exposure treatment (PE) and utilized a “PE Coach” designed to mitigate barriers to PE implementation. Features of the application included tracking severity of symptoms over time and the ability to record homework and audio record the PE session (Reger et al., 2013).

Van Ameringen and colleagues (2017), reviewed mental health applications currently being offered to the public. Examining mobile applications that provide a means of tracking, assessment, and treatment through a smartphone, researchers were able to ascertain that while there are many potential benefits to utilizing mobile applications in the clinical setting, there appears to be a disconnect between the evidence-base of the scientific community and mobile application developers. The study suggests that this disconnect results in questionable clinical utility.

Existing Smart Phone Technology and Devices for Monitoring Regulatory Strategies

As discussed, smartphone technology has been proposed as a value-added strategy for use in behavioral health learning new skills, self-observation, and tracking. Existing smartphone technologies and devices are also emerging as a culturally-derived strategy for self-tracking some regulatory capacities such as physical exercise, and alcohol consumption. Despite the pervasive utilization of these smartphone applications and devices their clinical utility to psychotherapeutic treatment has yet to be explored. Below is a table outlining the affect regulatory strategies and the current smartphone technology that tracks these functions.

Table 2. Existing Technologies

Regulatory Strategies	Existing Technologies that Track Strategy
Sleep	<ul style="list-style-type: none"> - Apple Watch - iPhone - Fitbit -Jawbone -Sleep as Android -Sleep Cycle -Sleep Bot -Sleep Time
Physical Activity	<ul style="list-style-type: none"> -Fitbit -Apple watch -my fitness pal -iPhone -Jawbone -Cycle Meter -Digifitcardio -Endomondo -Fitstar -Jefit Workout -Lose It! -Map My Fitness

	<ul style="list-style-type: none"> -My Ascics Run Training -Pact -Pear Personal Coach -Rockmyrun
Alcohol Consumption	<ul style="list-style-type: none"> -Intellidrink -BAC Alcohol Calculator -R-U-Buzzed -ALculator -AlcoDroid Alcohol Tracker -Alcohol calculator -Drinking Buddy -Alc Calc Pro
Social Media Consumption	<ul style="list-style-type: none"> -Moment -Checky -Menthal -BreakFree -Quality Time
Medication compliance	<ul style="list-style-type: none"> -My Med Schedule -MyMeds -RxmindMe
Nutrition	<ul style="list-style-type: none"> -My Fitness pal -Carbs Control -Food Intolerances -Nutrients -Healthy Out -Waterlogged -Fitocracy Macros -My Net Diary -My Plate -Lose it!
Mindfulness	<ul style="list-style-type: none"> -Conzentrate -Meditation Helper -Insight timer -Prayer Notebook -Questions to God -iBlessing -Azan Alarm Clock -iBCAP -Buddha Box -iBrevitypro

Examining the Clinical Utility of Technologies and Devices in Psychotherapy

As previously stated, despite the vast array of smartphone applications available for monitoring affective regulatory strategies, prior research has not explored how these technologies might be incorporated into psychotherapeutic treatment and harnessed as a strategy for encouraging clients to use these applications. Smartphone applications may be incorporated into psychotherapeutic treatment by directing clients to use these applications, and then use of the data generated by the application for reflection, or progress tracking in treatment. However, especially from the perspective of clinicians, the clinical utility of these technologies for use in psychotherapy remains unclear.

Smart (2006) explains “[t]hose who seek to introduce a novel technology, technique, or regime to health care are often asked to prove its clinical utility. There is, however, a lack of clarity about what clinical utility is or should be and how it can be judged” (Smart, 2006 p. 377). While clinical and cost-effectiveness are among the leading assumptions about what clinical utility means, Smart argues that clinical utility must also include the practitioners’ views and opinions about the novel intervention.

Smart (2006) illustrates that when examining a novel intervention, it is of paramount importance for the practitioners who will be utilizing the intervention to evaluate the appropriateness, accessibility, practicality, and acceptableness of the intervention. Appropriateness is the first tenant for clinical utility and refers to the effectiveness of the innovation to influence outcomes and to be able to support how the intervention may ‘fit’ into their current treatment process. The second tenant, accessibility includes economic affordability, as well as ‘procurement’ with questions such as “where would they be able to access this innovation?” (Smart, 2006, p.377). The

third tenant of clinical utility, practicality, focuses on the intervention's specific capabilities matching up with the practitioner's needs. The main question in this tenant would be "does it do what we need to do, in actual everyday situations" (Smart, 2006, p.377). Further, it is essential for this tenant to analyze the practitioners training and skill level to administer the proposed innovation. As Smart (2006) illustrated managers might have a hard time letting go of staff for the time that is required for them to attend training to learn about the new intervention, making its use less practical.

The final tenant of clinical utility is acceptableness. It is essential to find out if the practitioners using this innovation have any moral objections to the innovation as the practitioner's willingness to use the technology could be offset by moral or ethical concerns. According to Smart (2006), it is essential to assess these four tenants in the frame of three multidimensional approaches. The first lens is through the specialist opinions and judgments. The second lens is the organizational context of the workplace for the proposed intervention, and lastly, there is the societal lens which includes economic, political and cultural influences. The present study primarily viewed the primary research questions through specialist opinions and judgments.

CHAPTER 3: METHODS

Sampling Frame and Strategy

The sampling frame for the study included master's prepared clinicians in social work and counseling practicing psychotherapy in an outpatient behavioral health treatment setting. Convenience sampling was used to construct the study sample. Inclusion criteria included 1) the ability to speak fluent English, and 2) a minimum of two years of experience in the outpatient psychotherapy setting providing direct clinical care to ensure practitioners were seasoned enough to evaluate a new intervention.

Persons recruited for the study were used to help build the sample through referral to other clinicians or the snowball technique, through personalized emails and phone recruitment. The principal investigator (PI) approached clinicians, assessed if they met the inclusionary criteria, and requested their assistance with recruiting other subjects. Participants were offered lunch as an incentive for attending these focus groups. After indicating interest in participating, the PI notified participants of the scheduled focus group time and place.

Focus Groups

One of the most commonly utilized research methods in exploratory social science studies are group depth interviews or focus groups (Merton & Kendall, 1946). Scientists have continued using this effective qualitative research methodology because of its high face validity, flexibility, social element, time efficiency and cost-effectiveness (Krueger & Casey, 2000). Fern (1982) asserts that focus groups generate more information than individual interviews would provide because it stimulates conversations between participants which may otherwise not be captured in individual interviews. The

standard connection between the diverse current users of focus groups is the fact that they all believe that live interactions with like-minded people will produce answers to questions that go beyond the level of seeming explanation, instead of creating a more in-depth discussion and understanding of the group content (Morgan, 1997).

Human Subjects

The PI presented a written consent form (Appendix B) and answered any questions about the study procedures, risks, and benefits. All groups were tape recorded for analysis, and this was explained to the participants before each group. Focus group participants were told they could not refuse to record unless the entire group dissented as well. Participants were made aware that they were allowed to choose to have their responses removed from the transcripts used for data analysis before the start of the focus group. Further participants were aware their involvement was voluntary and the information shared in focus groups would remain confidential. The benefits and risks were described to the participants who were minimal. Participants were directed that they could stop participation in the study at any time. Benefits of the study included the incentive of lunch provided in all focus groups. Raw data and consent forms were kept in a locked file cabinet, and only the PI had access. Computer files were stored on a safeguarded hard drive that was password protected for the PI. No names were connected to the raw data. After transcription and analysis, audio recordings were destroyed.

Description of Sample

This study's focus groups included a total of 25 behavioral health clinicians with either a masters or doctoral degree in a mental health related discipline. Each participant contributed to one of four structured focus groups [Focus Group 1 (N=4); Focus Group 2

(N=8); Focus Group 3 (N=7); Focus Group 4 (N=6)]. In reference to age, the youngest participant was 25 years old and the oldest participant was 70 years old (\bar{x} =46.7). The majority of the sample was White (92%) and identified as female (64%). Most participants had a Master's degree (92%), and others had a doctorate in psychology. Participants had practiced a mean of 15.9 years after their terminal advanced degree, and participants has a mean weekly caseload of 13.8 clients. Twenty-eight percent of participants were credentialed on at least one insurance panel. The majority of participants (64%) worked with clients of all ages and approximately half the sample (52%) worked in an agency-based setting. In assessing participants use and comfort with smart phone applications, 100 percent of participants owned a smart phone and reported use of a phone daily. Comfort with a smart phone was evaluated on a Likert scale with 1 being very uncomfortable and 10 being very comfortable. Participants were very comfortable with using a smart phone (\bar{x} =9).

Table 3. Sociodemographic

		n	% of Sample	Mean	Median	Range
Age		25		46.68	45	25 to 70
Gender	Female identified	16	64%			
	Male identified	9	36%			
Race	White	23	92%			
	Asian	2	8%			
Credentialed	Yes	7	28%			
	No	18	72%			
Degree	MSW	8	32%			
	PsyD	2	8%			
	MS	4	16%			
	PhD	0	0%			
	MA	9	36%			
	M.Ed	1	4%			
	MFT	1	4%			
Years Post-Master's				13.8	12	2 to 42
Practice	Agency	9	36			
	Solo	16	64			
Weekly Caseload				21.24	22	0-52
Comfort with Technology				9	10	6 to 10
Participant Smartphone Usage	Yes	25	100			
	No	0	0			
Client Population	Children/Adolescent	4	16			
	Adult	5	20			
	Both	16	64			

Data Collection

Based on the primary research question, an interview schedule was created by the PI (see Appendix A for full schedule). This interview schedule was piloted in the first focus group. After the initial focus group, no changes were made to the format or questions. Overall, four focus groups were conducted. It was presumed this number of focus groups would provide adequate saturation (Morgan, 1997). Each focus group was

90 minutes in length. The moderator presented four primary question prompts, a strategic small number to allow for a more in-depth discussion (Henderson, 2004; Stewart et al., 2007).

Data Analysis

The constant comparative method (CCM) from grounded theory guided the primary data analysis in this research study (Boeije, 2002). Grounded theory has surfaced to be one of the most widely utilized methodologies for qualitative research since its inception in the 1960s (Glaser & Strauss, 1967). Grounded theory's CCM structure is helpful for primarily explaining a process or action, often through interviews with those familiar with the process or action. Sample sizes for grounded theory studies are usually within 20 to 30 range (Padgett, 2017). The CCM necessitates "inductive coding from the data, memo writing to document analytic decisions and weaving in theoretical ideas and concepts without permitting them to drive or constrain the studies emergent findings" (Padgett, p. 47, 2017).

The focus group sessions were audio recorded and professionally transcribed. The lead investigator, (CF) first familiarized themselves with the focus group transcripts and audio recordings, by listening to and reading them several times. The PI integrated constant comparative analysis to study any common ideas and divergences within each interview, then across interviews, then against Smart's (2006) model (Padgett, 2007). Using the CCM, each focus group interview transcript was openly coded by the PI. For each transcript, codes were compared with other meaning units in the same interview, to create an initial set of codes. Next, these codes were compared across the four focus group interviews (CF and SB) and refined. Finally, these codes were compared (CF and SB) to

Smart's (2006) 4 significant constructs to ascertain if the codes fit with these constructs or diverged into new patterns or ideas (Boije, 2002). The coding and analysis of focus groups were continuous, with analysis beginning with the first focus group and occurring after each subsequent group to create rich data from the interview (Rabiee, 2004). An audit trail was created and included memos regarding the creation of codes.

CHAPTER 4: RESULTS

Using Smart's (2006) model of clinical utility as a guiding conceptual frame, axial coding produced the following thematic content related to the four constructs of the model; namely appropriateness, accessibility, practicality, and acceptableness. Also, respondents' discussions generated discourse that captured their overarching views of technology and how it is changing not only behavioral health practice but the very nature of relating among people.

The themes presented below guided by Smart's constructs reference meaning units related to the use of smartphone applications as an innovation in the practice of psychotherapy. Most notably, respondents discussed the use of devices and mobile applications for tracking symptoms or other foci of self-observation, as well as for aiding clients in practicing coping skills. These included devices such as the Fitbit© and other fitness trackers, which measure physical activity and sleep, as well as applications such as Moodlytics©, an application for tracking mood throughout the day. Other applications referenced included those used for learning coping skills such as mindfulness meditation (e.g., Headspace©), diary applications useful for measuring thoughts and feelings (e.g., Worrybox©), physical activity and sleep (e.g., Fitbit © & Calm ©) and nutrition (e.g., My Fitness Pal ©). These applications often include observation features as well for monitoring how often various coping skills are implemented.

Although not the focus of the structured interview guide or the study, respondents referenced numerous other kinds of technology use in their psychotherapy practice either in sessions or between sessions with clients. Clinicians used Skype©, FaceTime© and other video conferencing software to hold sessions and maintain face to face contact with

clients when not physically co-located. Respondents also referenced referring clients to online videos (e.g., TED Talks) to help their clients conceptualize various aspects of their treatment. A very commonly mentioned use of technology including text messaging with clients. In settings where clients were treated in groups, group text messaging between clients and use of social media to facilitate group cohesion and communication was another strategy referenced in several focus groups.

Appropriateness

Appropriateness, the first construct of Smart's (2006) model of clinical utility, describes how innovation in practice is judged as fitting into current treatment processes. Smart (2006) explains that appropriateness is primarily judged based on the perceived effectiveness of the intervention and its relevance as a strategy for achieving a client's treatment goals.

In assessing the effectiveness of the use of mobile applications in psychotherapy practice, respondents viewed the use of several applications as effective for intra-session self-observation of symptoms and transfer of positive coping skills for affect regulation. In many cases, use of applications helped clinicians support the use of positive coping skills such as meditation, medication adherence, sleep hygiene, recovery principles, and respondents also mentioned applications being helpful for observing and monitoring mood, nutrition, substance use, depression, and anxiety. For example, a respondent mentioned an application utilizing a sober calendar, which is a way for clients to keep track of their continual abstinent days sober. Another application mentioned was specifically designed for individuals who are currently taking medication. There is an application that helps to remind clients when to take their medication and which

medications to take. “That’s really helpful for the people who have to take multiple medications at different times, especially,” (Focus Group Participant) explained one participant who treats a population of clients who take daily medication.

Clinicians frequently mentioned the use of applications for sleep hygiene. These clinicians either instructed their clients to begin to monitor sleep through the use of an application or clients who have brought tracking devices or applications as a topic in their sessions. Devices worn such as Fitbit© can track your sleep, how much you wake up in the night, how many times you are restless, and how long you stayed asleep. One participant said they feel as though they are speaking about sleep in almost every session they have with clients, making a sleep application relevant to her practice. Participants shared that sleep tracking technology is, “actually good for somebody who almost like perceives, because of their anxiety that they’re not sleeping. They could say, it’s not as bad as I thought. I can take care of this before it gets worse” (Focus Group Participant). This reduction in anxiety around sleep was referenced as extremely effective in helping clients to see their sleep in a more realistic frame. One participant explained they have clients exclaim, “I’m not sleeping, or I’m only getting – or if you believe, I’m only getting three hours of sleep a night, and you look and say, actually, no, I’m getting five and a half” (Focus Group Participant). Another participant shared about an application that can aid in helping a client to fall asleep; “the Calm© app also has something called Sleep Stories. So, they are twenty-five-minute stories that, you know – it’s meditative but it gets your mind off something, and you wake up, and you’re thinking about all the things you’re worried about. It just takes your mind off of it, and they’re nice” (Focus Group Participant).

Participants also referenced mood tracking applications they have utilized effectively in session with clients. One participant stated,

I love Moodlytics. It helps them set goals. It helps them to take notes about the emotions that they're experiencing. If they don't have the natural inclination to check in with themselves, they can get a ding multiple times throughout the day to check in with themselves and record the emotion that they are feeling and, as they take their notes, they can see their streaks throughout the week and the months" (Focus Group Participant).

Another clinician brought up a reason he uses these mood tracking applications, specifically for clients who may be going to see a psychiatrist for medication management. He explains,

I like to get them to understand and find a language as best they can before they walk into a psychiatrist. Because my philosophy is if you are going to a psychiatrist, there is a good chance you are going to walk out with a script, so you better be able to identify exactly – because I've had many clients over the years who say they are depressed – they're really anxious, and they're on maybe not the right medication. So that was a way to talk about knowing the difference between anxiety and depression when it comes up. Can they separate when it's situational – more relational – my anxiety goes up. The depression is more sometimes cognitive of my thoughts. Sometimes is it biochemical and it's just a pervasive feeling. So, I want them to have all those nuances to use that app for when they go back and get evaluated for medication. And, it saves me from being the middleman because, in the past, I've often gone with clients to say, look, he's presenting here, and he speaks – like this is what I see. I help them get on different medications or readjust their medications. I like the app" (Focus Group Participant).

Moodlytics© and other mood tracking applications were deemed effective in identifying core feelings, communicating these feelings to providers and relating them to any environmental or intrapsychic stressors.

Participants also referenced mobile applications for treatment issues idiosyncratic to particular patient groups. For example, one participant spoke about how she uses applications to track finances;

I work a lot with young people – twenty-somethings in families who have a difficult time launching into adulthood, so to speak, independently of their parents, so sometimes it really is helping them to develop skills of financial literacy to say how do you manage money” (Focus Group Participant).

She shared that many young adults aren’t quite sure how to manage money and through the use of a mobile application she can implement an intervention with her clients that allow ease in documenting finances.

Although clinicians viewed mobile applications as frequently an effective tool, they also discussed several lenses they use to assess the relevance of mobile applications for clients’ treatment goals. First, clinicians used a developmental lens to ascertain the appropriateness of use of a mobile application with a client. Namely, participants mentioned the importance of matching use of an application with the developmental stage or age of the client. Many participants explained that younger clients are more open to the use of technology and thus clinicians presumed greater buy-in from these clients to engage in this kind of therapeutic intervention. A clinician explained, “except for my younger clients, who introduced me to them. And the younger clients gobble it right up and the adult clients, especially the women clients, are very open to it, too” (Focus Group Participant). Participants illustrated that it would be more organic for younger clients to utilize their phones, “[f]or adolescents, kind of what you are saying, I could imagine that this is just much more natural for them to go right into their phone and, you know, plug things in” (Focus Group Participant).

Further, in addressing relevance, participants referenced several areas that delimit the relevance of mobile applications for behavioral health clients. Respondents recognized that relevance of a mobile application was contingent on the presenting needs of each and their specific symptom profile. Often, respondents viewed mobile

applications as enhancing and subsequently worsening the client's core symptoms. In these cases, mobile applications functioned iatrogenically. As an example, respondents reported trepidation about using an application that tracks nutrition or exercise for clients who may be inclined to obsessive thinking. In all four focus groups, respondents discussed the potential for mobile tracking applications to create or increase preoccupation and obsession around a particular aspect of the experience.

For example, one participant stated, "I guess you have to be careful that it doesn't promote their obsession" (Focus Group Participant). Another participant explained,

this one family – I thought it was super cute like the family was all competing with each other about how many steps they would do a day and then I found out Johnny, one of the kids, I'll just say, Johnny, was like running up and down steps the other night just to make sure that he got more – and at what cost? It's just like a fun thing to inspire and to have some healthy competition or healthy way to kind of track, but on another hand, it can get really [obsessive] – and, so, it depends" (Focus Group Participant).

There were many examples similar to this in each focus group, with several participants talking about clients who struggle with eating disorders becoming fixated on tracking food or exercise. Similarly, many participants shared about the sacredness of trauma work, the importance of creating a safe space, and that perhaps if you are doing deeper trauma work, use of technology may not be appropriate. "I mean, it depends on what the client's struggling with, too. Because if they're someone who is deeply unregulated or dealing with really deep trauma, I'm going to be hesitant to do any of these apps because they are already so dysregulated," described a participant (Focus Group Participant).

Finally, although infrequently mentioned, some applications were deemed less relevant in situations where the use of an application may hinder the progress of a client using a coping skill or treatment approach. One clinician offered caution about the use of

an application which promotes EMDR (eye movement desensitization and reprocessing)-related techniques. She explained,

another – most of my out-patient practice is doing the EMDR with clients and some of my clients have found EMDR apps -- or there is a newer technology called TouchPoints. You can get the audio on YouTube. TouchPoints -- the more expensive edition comes with an iPhone app with pre-programmed settings, I guess, for attention, for stress reduction, for trauma, for different moods. So, for clients with no experience with the EMDR – clients who might not have good coping skills or social support, these apps could cause harm (Focus Group Participant).

Another participant shared his concerns that perhaps mindfulness applications could corrupt one's openness to mindfulness. He explains,

sometimes I feel like, too, you know, like if I bring up mindfulness they'll like have seen it through some app or like through some YouTube person or something like that, and really it's not scientific stuff, and it really like, kind of like corrupts like the beginning of doing that skill if they are willing to do that skill, now, you know, so if I'm just putting out a bunch of apps, it kind of can corrupt what we do (Focus Group Participant).

Accessibility

The second tenant of Smart's (2006) model addresses the accessibility of a treatment innovation to clinicians, as well as clients. Accessibility is contingent on the resources needed to obtain and use the innovation. As such, economic affordability is a crucial indicator of accessibility. Outside of economic factors, the ease with which you can procure an innovation is imperative for assessing the accessibility, and subsequent clinical utility of the new treatment (Smart, 2006).

In discussing mobile applications, participants reported that because smartphones were ubiquitous, and because mobile applications were often free or of nominal cost, they were reasonably accessible to both the therapist and the client. However, one participant

spoke about working with populations who not have access to a smartphone, or mobile applications, because of socioeconomic status.

Regarding procurement, a small number of participants referenced that there are sometimes barriers to the ease with which clients may access mobile applications. For example, a clinician who works with children and adolescents spoke about needing to ensure parental permission before they suggest use or purchase of an application. This clinician stated she would need to get explicit parental permission before suggesting the use of an application. This lead to a discussion about how often younger clients will download applications without their parent's approval and will spend their parent's money to do so, which could cause conflict in the household.

Practicality

The third tenant of Smart's (2006) model of clinical utility, practicality, focuses on the innovation's specific capabilities matching up with the practitioner's needs in practice. Practicality is threefold in nature. First, the functionality of the innovation depends on if it is "is it complete and in working order" (Smart, 2006, p. 380). Second, suitability assesses if the innovation "does...what we need it to do in everyday situations" (Smart, 2006, p.380). Lastly, practicality includes assessing if practitioners have the skills necessary to implement the innovation, and the training needed to address current and future needs. Smart (2006) cautions that the burden of training for some innovations way outweigh the benefits of its implementation.

Few participants referenced any overarching concerns with the functionality of mobile applications. However, they discussed they often work around some of the perceived inadequacies in existing applications and attempt to make a functional

application fit into their practice. Some participants stated they desired the creation of an application specifically tailored to psychotherapy or their practice. Some participants desired an application explicitly made for therapists to utilize in a clinical setting would be helpful. As one participant shared,

[y]eah, whereas for us, it would be nice if they had some like apps – for us to then to introduce into – like we’re always having to bend and like create new strategies to like incorporate this whereas like, really clinically or ethically, you’d think they would make it for us to then be able to use in a therapeutic way (Focus Group Participant).

The functionality and suitability of mobile applications were dependent in part on the setting in which one practiced, and participants discussed the constraints their current practice setting would place on the use of these applications. Those who were not in private practice brought up a barrier to utilizing technology in their agency by stating,

I mean I think the other thing, too, is the difference between working in private practice and you self-selecting your modalities as opposed to working in an agency, where the agency may tell you what modalities you can or can’t use. You know, there may be in the agencies, supervisors who aren’t willing to have people use apps because they can’t monitor [their use] (Focus Group Participant).

Relatedly, some applications were deemed to require too much monitoring on the part of the clinician to make them practical. For example, one therapist explained that she knows of an eating disorder application which links to the therapist’s phone, and it is the therapist’s job to check it to see what their clients are eating. She explained that she would not be willing to utilize an application like this one because of the burden of time and distress it would cause her to check on the client’s diet. Another clinician explained she wouldn’t want to spend time in session reviewing an application results, “[y]eah, I think if I had a client who was really interested in using this technology and they wanted to, I would be all for it, but I wouldn’t want it to be something that we spent a whole lot

of time like reviewing in the session. If it was something that was sort of helpful to them, go for it” (Focus Group Participant).

The most significant theme to emerge from practicality was about the practitioners’ perceived skills and capabilities by using mobile applications in practice (Smart, 2006). Several participants expressed the lack of training they have with these applications. Many of the participants voiced a feeling of inadequacy when discussing and encouraging the use of applications with clients, often leaving them less likely to suggest the use of applications in practice. For example, one participant stated “I haven’t researched some of these [apps] and haven’t been trained, and it’s not like really a workshop yet where they would say, here’s the app, you can use it and – I would do that. So, the barrier is training or self-training” (Focus Group Participant). Another participant stated, “[y]ou see all these learning experiences, CE continuing education classes, and there isn’t much about the technology and use in clinical practices or use for clinicians” (Focus Group Participant). Participants in all four focus groups stated that they needed more training on the use of technology in a therapeutic setting.

Acceptableness

In assessing the clinical utility of an innovation, Smart (2006) cites that the new treatment must be aligned with clinicians’ moral and ethical frame for practice. Smart states that any moral objections to innovation must be probed and addressed in planning for implementation of the technology.

In all of the focus groups, participants placed moral importance on not replacing the interpersonal relationship in the therapeutic space with technology. One participant explained, “[s]o in relation to using technology in psychotherapy, I’m always conscious

of the use of technology to enhance relationship ability, but not replace it” (Focus Group Participant). Other participants reinforced this argument explaining they use technology “more along the lines of an... an adjunct thing to our counseling” (Focus Group Participant). Another said,

I have a little bit of concern about trying to replicate something that’s supposed to be between two people. Like the sense of safety that you get from a therapist over time, where you feel like the clinical action or vulnerability happens, unplanned. When you’re, you know, describing your trauma or you’re in a safe space. I would worry about the attempt to duplicate that in any other way through a phone” (Focus Group Participant).

Another clinician claimed,

it’s like Dan Segal with interpersonal neurobiology, talks about the one human trait that all human beings need is the need to feel felt by another human being. And to feel felt, that so summarizes for me the struggle that I have with technology in a certain kind of way and to feel felt, via the iPhone doesn’t do it quite the way human-to-human does. It’s not bad, but it’s not the same (Focus Group Participant).

She goes on to explain,

[i]t can enhance it. It can add to it. It can sometimes diminish it, but it can’t replace it. That point of contact between two human beings in the presence of each other cannot be – I can replicate it in a lot of ways through technology and do it, but it is never going to be the same. To me, it does not replace. That’s the word I’m looking for. I don’t want technology nor do I want to give the impression to clients that technology will and can replace the human-to-human contact relationship (Focus Group Participant).

Other participants had concerns about the intrusion of technology on the therapeutic space. One clinician explains, “I feel like technology can interfere with the interpersonal relationship – not the relationship but the interpersonal moment of connection, right, that sort of Gestalt sense of being very present in the moment, you and I here and now in this moment” (Focus Group Participant).

Besides the impingement of technology on the relationship, respondents had a significant concern regarding the use of technology and how it could threaten a client's privacy through corporate data sharing for marketing, advertising, and profit.

Participants feared use of mobile application contributes to corporate exploitation for profit and capitalist gains. One respondent said, “[i]f we are encouraging them to use apps that we don't know their true ownership or their true intentions of knowing that information, that's the only downside. We are encouraging our clients to use the product, but probably we don't know the intent” (Focus Group Participant).

Relatedly, maintaining client confidentiality was another significant concern in each focus group. Clinicians were concerned that mobile therapeutic applications are tracking mood, nutrition, or other private information, make clients vulnerable to others viewing this information. Many participants had questions about this but very few answers. “One of the things that I was thinking about is confidentiality – that we get another question about that. Just confidentiality and then also where all that information could go. I guess protection for them – for each person. Who would be using this?” (Focus Group Participant).

Finally, participants objected to the lack of vetting for mobile applications that promote symptom tracking or coping skills. Clinicians perceived it might violate the values of evidence-based practice to encourage clients to use apps that do not have any scientific evidence to support their use. One participant adamantly stated, “[p]eer review. I guess for me, like trust. Whether the app is, you know, \$14.99 per download or if it's going to be something that I'm reading about in either Social Worker Counseling Magazine and it's being -- gone through some review” (Focus Group Participant).

Another participant simply stated, “I would want the science” (Focus Group Participant), explaining that it would be essential to see the science behind any kind of intervention that he would suggest for a client.

Acceptableness: *Technology is changing the very nature of practice.* The concerns regarding acceptableness above referenced clinicians’ views on the clinical utility very specifically of smartphone mobile applications. However, throughout all of the focus group discussions, discourse frequently centered more generally around the impact of phone and computer technology on the very nature of psychotherapeutic practice. In particular, clinicians cited that the advent of widespread use of text messaging required constant attention to the frame of the clinical relationship and clinicians used a variety of strategies to maintain boundaries around text messaging. Also, there was a diversity of ideas on the risks and benefits of text messaging. Many participants emphasized the importance of setting boundaries with their clients to ensure they were not providing therapy via text, which is often elicited by younger clients in between sessions. Some participants discussed that they used text messages to cancel and create sessions, but beyond that, they were uncomfortable communicating with client’s intra-session via text or email.

People use it for appointments. I’m always kind of reinforcing the boundaries with the iPhones about, you know, once you put content in there – I mean, I have a gal I work with from New York, and she puts stuff in there in a text that is totally inappropriate, but I have to remind her the next session that looks, you know, we should just use [texts] –to text appointment times, cancellation, that sort of thing. Anything else, I can’t guarantee confidentiality, because somebody could pick up your phone. Oh, yeah, yeah, I get it – if she is talking about her alcoholic dad or stuff like that (Focus Group Participant).

Another therapist shared that to cover his ethical stance and his liability; he explains to clients that he deletes every text that is sent to him from any client, but that they are

responsible for anyone who may go into their phone and read text messages they are sending to him. In contrast, some clinicians emphasized that text messaging may help clients feel safe in times of distress. A respondent illustrated the use of intra-session text messaging, explaining he frequently works with people who struggle with addiction, and it could take some time for them to develop and sustain a community of sober individuals. Therefore, he instructs his clients “[u]ntil you have a bigger connection, you can text me” (Focus Group Participant). He continues to explain specific occurrences he has utilized this intervention, and how he will immediately text back saying what time he can talk to the client, and that simple text message back is frequently the transformative intervention, because, at the time of his call back to the client, they often forget why they were in distress, the participant illustrates, “[i]nteresting, by the time I call them back, just having that one or two texts before I call them back, they’ve already calmed down” (Focus Group Participant). Another participant revealed an intervention she has used with her teen group therapy, she created a social media account and explained her reasoning for choosing to create this blog, commenting, “[a]nd with blogs, that’s part of the reason why I wanted my own Instagram that I can kind of monitor the kids that are contributing because I want to help them see that when they deepen their process without that support, that can put them into a risky situation” (Focus Group Participant).

Another emerging topic in the focus group discussions was the use of video conference sessions for clients who travel or for offering ongoing therapeutic intervention. Some clinicians commented how video-conferencing is helpful to maintain continuity of care when a client is traveling or in distress. Other therapists voiced some concern around utilizing video conferencing because of a lack of confidence in its

confidentiality, as well as barriers to making eye contact engendered by the use of webcams. However, there was little consensus on the benefits or costs of this innovation in psychotherapeutic practice.

Acceptableness: *Technology is the problem, not the cure.* Again, while not the focus of the structured interview questions, participants frequently discussed more overarching fears about technology and its impact on society and the developing child. Very frequently, participants argued that technology, and its rapid explosion in society, was the cause of mental health problems, as opposed to the cure for these issues. One participant shared “[a]nd I worry about reinforcing that and, you know, I feel like it’s kind of -- there’s a fine line because I, you know, attribute a lot of the increase in mental health issues that the kids and young adults are experiencing right now -- I think a big, big component of that is technology” (Focus Group Participant). Participants shared that they believe the intrusion of technology (specifically, the overuse of technology in the form of social media, texting, and apps) diminishes interpersonal relating in daily life. One participant shared how she feels that technological connection could be a manufactured non-organic way of communicating; she said,

it’s just like I think that a lot of the connections that kids have right now are kind of a cheat connection. It’s not deep, meaningful connection. It’s just kind of like quick here and now connection. And that’s something I think about regarding like meeting them where they are but then how close are you meeting them and how much are you feeding into this idea (Focus Group Participant).

Participants discussed the evolution of the use of technology for they reported distress about the meaning of the connection and a perception that this form of connection could be less “real” than face-to-face interaction and breed a potential increase in loneliness and isolation. One participant shared a real-life example he had with a client recently,

no, the extensive social feedback loop is so broad and so immediate and so mood-altering that somebody can feel really good at 10:00 a.m. and then they see online their sister posted a picture of them at a party the other night with another sibling and said, why didn't they invite me, oh my God, and then down the rabbit hole they go. I see a lot of adult siblings, 40s, 50 years old and saying, wow, my brother was traveling and invited my sister and didn't [invite me] (Focus Group Participant).

Clinicians referenced a related idea, namely “FOMO” also known as “fear of missing out” and how social media can often times exacerbate this because everything people do socially is recorded and posted, and everyone has an audience they are catering to, and sometimes members of that audience are jealous or feel they are missing out on a good time, either because they weren't invited or because they couldn't go to an event for various reasons. Thus, because of technology, dysregulation ensues.

Other clinicians shared about how technology creates and expands the need for immediate gratification as opposed to distress tolerance or sitting in uncertainty. For example, one participant reports,

technology is counter to resilience building concerning delayed gratification because everything is immediate. If I don't respond to an email or a student's email, or a client's text within a concise frame period I will get another one and/or a conversation when I see them, are you mad at me, are you upset, or how come you didn't or am I bugging you? It's just like, wow, that ability to delay gratification in relational dance is so important for long-term intimacy and that – something in that feels like it's getting lost. That could be one of the dangers – the dangers of therapeutic technology use are that it decreases intimacy as opposed to increasing [it]” (Focus Group Participant).

Technology promoting instant gratification was a common theme, which as this participant believes, could be counter to resilience.

Several participants talked about the dangers of younger people using technology at a developmentally vulnerable age. They shared about how they worry this use of technology may impact brain development, leading to shorter attention spans and other

neurobiological implications. One participant shared about their belief that brains have become rewired since the introduction of technology stating, “we’re becoming rewired, and I think they have already been rewired. They grew up with technology. We now have a generation who grew up with a smartphone at a cognitive age. They’re rewired” (Focus Group Participant).” This participant went on to share that she believes the capacity for affect regulation could be rewired as well. “And, so when we come back to emotional regulation and the use of applications in therapy, particularly with people around emotional regulation, my concern is how our brains are being rewired in some ways through technology” (Focus Group Participant). Another participant related this to a concern related to how parents have regulated or under-regulated their child’s technology use during fragile developmental years. Cyberbullying was also cited as a concern for clinicians working with youth “I think that’s what with bullying online is what we see is that parents who don’t have a lot of oversight then that’s where the bullying takes place because parents aren’t aware of what they’re kids are doing online and the social networking sites aren’t doing enough to combat it” (Focus Group Participant).

CHAPTER 5: DISCUSSION

Major Findings

This qualitative exploratory study examined clinicians' perspectives on the clinical utility of incorporating existing mobile smartphone technologies into psychotherapeutic treatment. Through the use of focus groups comprised of masters prepared clinicians with at least two years of experience in an outpatient setting, with an interview schedule guided by Smart's (2006) clinical utility framework. Among behavioral health clinicians, research questions addressed the perceived a.) appropriateness of using smartphone technologies as a means to help clients self-observe emotional regulatory markers and practice new skills, b.) accessibility of smartphone applications to these clients, c.) practicality of such applications, and d.) moral or ethical concerns in regards to the use of these technologies. Below the significant findings of this exploratory study as related to appropriateness, accessibility, practicality, and acceptableness are reviewed. These findings are linked to implications for practice and research. The discussion concludes with study limitations, those who were foreseen in the proposal and those which were revealed throughout the study.

First, therapists expressed considerable comfort with the use of smartphones and technology. Throughout all focus groups, smartphone technology was reported to be frequently used by clients and therapists. Two primary situations were referenced through focus group discussion; clients either bring in use of mobile applications to the therapist and the therapist is open to their incorporation or the therapist suggests the use of mobile applications to target specific symptoms. This finding is aligned with a general trend in the field. As stated above, the Institute of Medicine as early as 2006 began to

identify the rapid evolution of technology, purporting it could be a unique way to collect individualized personal data including, sleep, mood, and activity (Institute of Medicine, 2006). Additionally, the National Council for Behavioral Health (2014) advocated for the use of technology in clinical settings, foreshadowing the effectiveness for personalized tools assessments by providing individualized, granular, unobtrusive and affordable way of symptom profiling and real-time assessments (The National Council for Behavioral Health, 2014; Moskowitz et al., 2009; Trull & Ebner-Priemer, 2013). Although several pre-experimental studies were cited as suggesting the use of technology being effective in a clinical setting (Reger et al., 2013; Luxton et al., 2014; Bush et al., 2013), future research needs to examine this effectiveness further especially given the openness of the workforce to incorporating smartphone technology into practice.

An emphasis on person-centered care, as guided by humanistic models of psychotherapy, seems to guide clinicians' openness to use of smartphone technologies in practice. Numerous therapeutic models ranging from cognitive behavioral therapy, psychodynamic, dialectical behavioral therapy, and family systems modalities all have one component in common; a humanistic person-centered approach. Carl Rogers (1968) is primarily credited with outlining a person-centered approach. Rogers purported that the therapeutic relationship between the client and the therapist is where the most healing takes place, and this is guided by unconditional positive regard and empathy. In the present study, focus group participants instituted client-centered care and often welcomed clients' self-directed use of an application for wellness, and often suggested the use of applications to treat symptoms. Additionally, respondents used technology to offer intra-session support to further client-centered goals. Many of these interventions are guided

by the clients' directive; hence the person-centered Rogerian approach many clinicians reported using with their clients.

Again, although participants used pre-packaged applications not created for psychotherapeutic use but designed as self-help strategies, they indicated a need for an application specific to the psychotherapeutic practice. They found themselves utilizing applications and "bending" these applications to their needs as clinicians. However, participants frequently reported feeling like they needed to utilize multiple applications and change the intention to be therapeutic. They had to take an application and mold it, to aid in an intervention. There is a dearth of literature in this realm, with no evidence suggesting that practitioners desire an application specific to the psychotherapeutic practice.

While many organizations such as the National Council for Behavioral Health and the Institute of Medicine have insisted that technology is utilized in the psychotherapeutic space, there has been little research analyzing if clinicians would be accepting of technology. The clinical utility of technology findings was twofold; clinicians both found technology to be helpful in aiding client-centered self-observation and skill transfer, they also found several barriers to utilizing technology in the therapeutic space. While participants are welcoming to the use of smartphone applications to offer person-centered care, they also reported a range of concerns or caveats to their use. First participants reported the practicality of applications lacks because there is little training as to how to effectively implement technology into the psychotherapeutic setting. While clinicians may feel personally comfortable with utilizing technology, some reported they do not yet feel comfortable utilizing technology as an intervention. They desired to learn

more about applications and to have a vehicle for this knowledge base to remain timely and relevant. Having little training to utilize technology compounded fears that they could make their client's symptoms increase by suggesting the use of technology. These are just some of the barriers identified, which standardized guidelines would help.

Recently, guidelines for technology have been created by professional organizations such as the National Association of Social Workers. These guidelines provide standards, ethics, and values to aid social workers with a framework of how to approach situations implicating technology. Each practice standard relates to one of four themes concerning social workers' use of electronic technology; a.) information provided to the public, b.) designing and delivering services, c.) gathering, managing and storing information, and d.) educating and supervising social workers (NASW, 2017). This study addresses the designing and delivering services. Many of the guidelines for the use of technology addressed the main concerns many practitioners had in this study. Standard number 2.05 (p.15) describes the assessment that needs to take place before implementing technology into the therapeutic process. Findings of the study are aligned with this as many clinicians stated they would not feel comfortable suggesting the use of technology before performing a thorough assessment to ensure that clients have not struggled with compulsive behavior towards technology. Practice standard 2.06 (p.16) suggests that the social worker must have competency including the knowledge and skills required to suggest and integrate the use of technology, yet another theme that emerged in focus groups of the present study (NASW, 2017). However, focus group participants found training in the use of technology scarce, citing that they struggle to find appropriate training to aid in increased technological competency.

These guidelines for the use of technology set forth by a national institution, are of paramount importance to clinicians who are open to utilizing technology but are wary of the potential identified risks. Future research needs to examine the extent to which the guidelines which have been set forth are being read and integrated into practice as well as what barriers stand in the way of national associations such as NASW to facilitating training on how to incorporate technology into the therapeutic setting.

A significant finding exposed participants feeling uncertain in using applications given the lack of research and vetting of mobile applications. Evidence-based practice is defined as the “conscientious, explicit, and judicious use of current best evidence in making decisions about care of clients” (Gibbs & Gambrill, p. 452, 2002). Participants shared about feeling confident in utilizing evidence-based practices in client care. However, respondents felt distrust and guarded when suggesting the use of mobile applications given the lack of research and evidence measuring their effectiveness. This finding suggests that clinicians could avoid integrating technology in the therapeutic setting because of the perception that it could violate evidence-based care. Future research is needed to examine the degrees to which kinds of applications referenced impact key patient outcomes.

Third, use of applications not rooted in the evidence-base may lead to iatrogenic effects, which include harmful outcomes of treatment that are caused by the treatment itself. Clinicians in this study were fearful that use of applications might exacerbate symptoms. Focus group respondents reported they suggest the use of applications more cautiously to those individuals who may be more inclined to obsessive thinking, rigidity and compulsive behaviors. This aligns with the research which suggests that the

exponential increase in fitness devices and calorie trackers have triggered, maintained and exacerbated eating disorder symptomology (Simpson & Mazzeo, 2017; Hefner et al., 2016). Further, the addictive quality of technology use was mentioned several times with examples such as constant checking of phones and misuse of social media. Depending on the personality of the client, participants may be less inclined to suggest the use of technology. The literature supports respondents' perceptions. Hsiao (2017) examined the big five personality traits finding that varying personality traits influence the compulsive use of technology. Study participants also cited suggests that obsessive use of technology could be increased or decreased depending on the individual's personality. The participants seem to have the working clinical knowledge that each client may respond differently to the use of technology. Thus, the suggestion of technology must be well-informed.

Also, the respondents were concerned that suggesting the use of a mobile application could lead to further dependence on a technology that could increase loneliness and isolation. Participants shared that often their clients are looking to get away from technology not become closer to it. As such incorporating technology into psychotherapy may impinge on clients' treatment goals. Respondents expressed concern that technology is a culprit of continued isolation in their population and lack of connection between friends and family members. This finding aligns with much of the research suggesting that technology use could lead to isolation and in turn, depression (Leffel, 2010; Goddard, 2012; Gunnell et al., 2017).

Likewise, other participants expressed concerns about how technology could be impacting the developmental brain, some mentioning how a potential rewiring occurs

with the increased level of instant gratification, so many emerging technologies provide. While there has been much written on increased social media use correlating with decreased body image (Fardouly et al., 2015; Perloff, 2016; Suplee, 2018), there seems to be a dearth of literature surrounding this particular theory set forth by participants in the present study. While the concept of instant gratification and technology use is not a complete unknown (Panek, 2013), participants in the present study specifically referenced how social media and technology use could have the capacity to rewire the developing brain. Although the current research available is insufficient to support the rewiring hypothesis, there is much literature on the impact of screen time on the developing child, that measures the length of time spent looking at and engaging with screens, including phone use and computer use (Wu et al., 2015; Gunnell et al., 2017). Studies suggest there is a correlation between increased screen time, decreased physical activity, increased depression and anxiety symptoms. Even organization such as the American Academy of Pediatrics (AAP) are hosting panel discussions and placing forth guidelines and recommendations in regarded to screen time and the developing mind. Further, the AAP created a website to help guide parents to create a customized media plan for each child. Recommendations purported by AAP include prioritizing family time over screen time, balancing media use with other healthy behaviors and ensuring media use does not displace physical activity, hands-on exploration and face-to-face social interactions (AAP, 2016). Participants in the present study have witnessed first-hand how over-use of technology may increase, isolation, anxiety, and disconnection from peers and family. These clinician focus group findings support the idea that connection is crucial in maintaining a healthy lifestyle and that technology can interfere

with social connection, increasing isolation and thus mental illness symptoms (Fenkel, 2017).

Further, respondents reported suspicions of the impact of technology on society. The present study's participants appeared to place a hierarchy on types of communication in the 21st century. The concept that face to face interaction is the highest most respectable form of social connection emerged throughout the focus groups. Second would be talking on the phone, and the least desired form of communication for their clients would be texting/social media use. The results suggest that clinicians are hesitant about encouraging the use of technology because of their own opinion that technology has decreased authentic connection. Implications for future research need to explore ways in which technology, may paradoxically to clinicians' concerns, increase connection.

Participants were also wary of utilizing technology to treat specific populations such as obsessive personalities and eating disorders but also identified patients suffering from trauma as being another population they would want to avoid introducing technology to in the therapeutic setting. Respondents were avoidant of technology for individuals seeking trauma treatment for fear of being triggered and not being capable of down-regulating. Trauma is conceptualized as a result of abuse, violence, neglect, disaster, loss and interpersonal harmful experiences (SAMHSA, 2014). Trauma is examined through the events that happened to the individual, the experience the individual had during these events and the effect the experience had on the individual (SAMHSA, 2014). Clinicians who are steeped in trauma-informed therapy are primarily focused on creating safety in the therapeutic setting, as safety is crucial in

preventing re-traumatization. Future research is required to determine how mobile applications can be appropriately integrated into trauma-informed patient care.

To create and maintain a safe space for clients, respondents spoke about creating a strong inter-personal therapeutic relationship. However, participants revealed the difficulty in introducing technology to the therapeutic setting because it could impinge the inter-personal therapeutic space. Participants divulged feelings of worry and concern, citing that the essential part of therapy is the therapeutic relationship, which is another Rogerian humanistic principle and a core assumption of most psychodynamic models of treatment. Clinicians seemed less accepting of the integration of technology in the therapeutic space, because of the views that technology could invade the potentially budding and fragile relationship between client and practitioner. Therefore, the technology could instead be counterproductive to a relationship-based. This finding was significant as it illuminated the level to which our specific sample respected the therapeutic relationship and exposed the nuances to which a therapist would be less accepting of technology. Future research should address the extent to which therapists feel that technology has impinged on the therapeutic relationship, and perhaps explore how it might support the relationship.

Further, respondents reported suspicions of the impact of technology on society. Many participants talked about the rapid shift of technology in communication, frequently sharing about their own experience with how technology corrodes the fabric of society, allowing people connections with texting and social media use. Other participants expressed concerns about how technology could be impacting the developmental brain, some mentioning how a potential rewiring happens with the

increased level of instant gratification so many emerging technologies can provide at such a young age. Additionally, therapists revealed their fears surrounding technology replacing clinicians and in-person sessions, citing the numerous text-therapy applications on the market. Future research is needed to examine how technology can be implemented in treatment to enhance the therapeutic relationship as opposed to replacing it.

Limitations

There is little research in this area. Therefore, the exploratory nature of the study is an essential first step in addressing the integration of smartphone technology into the psychotherapeutic setting. This exploratory study has contributed to the very nascent literature on the use of mobile applications in psychotherapy. However, because of the limited sample size, future qualitative analyses could enrich this beginning understanding further.

Furthermore, our sample does not include other practicing disciplines of mental health professionals such as psychiatrists, psychiatric nurse practitioners, physician assistants and bachelors level counselors. A significant portion of participants (64%) identified as working in private practice or group practice setting with only 28% being credentialed. This limits the client sample to only those of higher socioeconomic status. Of the 36% of participants who reported being employed by an agency, there was little discussion of a community-based population, thus, in only one focus group was lack of smartphone accessibility mentioned. This limitation creates remaining questions, mainly, does a community-based population have access to smartphone technology similar to the ones referenced? While focus groups are an effective way to capture thoughts and

opinions of individuals meeting specific criteria, they have inherent limitations, and a central one is that the influence the group may shape individual opinions such that social desirability skews results.

The focus group questions were not specific enough in the pathway to technology use. Therefore, results indicated that there were two groups of respondents, those who suggested the use of technology and those who were open to incorporating the use of applications. Unfortunately, many respondents shared about application usage but failed to mention how the application was introduced into the clinical setting. The question prompts were not specific enough to identify the pathway to technology use. Future research is needed to examine this to ascertain the influence of this innovation.

Conclusion

This exploratory study provided an enriched knowledge based on the use of smartphone technologies in psychotherapeutic practice and also illuminated multiple opportunities for future research. In particular, the study highlighted the need for improved workforce training and guidelines for integrating smartphone technology into the therapeutic setting. Further examination of the effectiveness of such applications for supporting affecting regulatory goals of psychotherapy is needed. Most importantly, this study raised the question, is the use of smartphone technology in clinical psychotherapy practice a problem as opposed to a cure? Alternatively, have we yet to discover ways to safely and effectively apply smartphone-based strategies for promoting connection, affection regulation, and wellness in vulnerable clients? It is imperative that clinical social workers and other behavioral health clinicians provide leadership and expertise in answering these questions.

References

- Ajdacic-Gross, V., Wang, J., Bopp, M., Eich, D., Rossler, W., & Gutzwiller, F. (2003). Are seasonalities in suicide dependent on suicide methods? A reappraisal. *Social Science and Medicine*, 57(7), 1173–1181.
- Aksoy, A., & Kelleci, M. (2016). Relationship between drug compliance, coping with stress, and social support in patients with bipolar disorder. *Düşünen Adam: Journal of Psychiatry and Neurological Sciences*, 29(3), 210-218. doi: 10.5350/DAJPN2016290302
- Akbaraly, T. N., Sabia, S., Shipley, M. J., Batty, G. D., & Kivimaki, M. (2013). Adherence to healthy dietary guidelines and future depressive symptoms: evidence for sex differentials in the Whitehall II study. *American Journal of Clinical Nutrition*, 97(2), 419-427. doi:10.3945/ajcn.112.041582
- Alleman, J. R. (2002). On-line counseling: The Internet and mental health treatment. *Psychotherapy: Theory/Research/Practice/Training*, 39, 199-209.
- American Academy of Pediatrics announces new recommendation for children's media Use. (2016). *American Academy of Pediatrics*. Retrieved from <https://www.aap.org/en-us/about-the-aap/aap-press-room/pages/american-academy-of-pediatrics-announces-new-recommendations-for-childrens-media-use.aspx>
- Anagnostopoulos, G. (1972). Plato's psychology: A review. *Journal of the History of Philosophy*, 10(2), 217-221. doi:10.1353/hph.2008.1425
- Anderson, C.A. (1987). Temperature and aggression: Effects on quarterly, yearly, and city rates of violent and nonviolent crime. *Journal of Personality and Social*

Psychology, 52(6), 1161-1173.

Applegate, J. S., & Shapiro, J. R. (2005). *Neurobiology for Clinical Social Work: Theory and Practice*. New York, NY: W. W. Norton.

Association between media use in adolescence and depression in young adulthood.

(2008). *Archives of General Psychiatry*, 66(2), 181. doi:10.1001/archgenpsychiatry.2008.532

As tax deadline approaches Americans say money is number one cause of stress. (2004).

American Psychological Association. Retrieved from <http://www.apa.org/news/press/releases/2004/03/money-stress.aspx>

Baker, T., McFall, R., & Shoham, V. (2008). The current status and future of clinical psychology: Towards a scientifically principled approach. *Psychological Science in the Public Interest*, 9, 67–103. doi10.1111/j.1539-6053.2009.01036. x

Barlow, D. H. (2014). *Oxford Handbook of Clinical Psychology, Updated Edition: Schools of Psychotherapy and The Beginnings of a Scientific Approach*. Oxford: Oxford UP.

Barnes, P., Clark, E, & Thull, B. (2003). Web-based digital portfolios and counselor supervision. *Counseling Faculty Publications*, 3(1), 111-125.

Berry, T., Srebalus, D. J., Cromer, P. W., & Takacs, J. (2003). Counselor trainee technology use skills, learning styles, and preferred modes of instruction. *Journal of Technology in Counseling*, 3(1). 146-151.

Brown, B. (2010, June). The power of vulnerability. *Ted Talks*. Retrieved from https://www.ted.com/talks/brene_brown_on_vulnerability

Brown, L.F., Reynolds, C.F. Monk, T.H. Prigerson, H.G., Dew, M.A., Houck, P.R., ... &

- Kupfer, D.J. (1996). social rhythm stability following late-life spousal bereavement: Associations with depression and sleep impairment. *Psychiatry Research* 62(2), 161-69.
- Bush, N. E., Skopp, N., Smolenski, D., Crumpton, R., & Fairall, J. (2013). Behavioral screening measures delivered with a smartphone app: Psychometric properties and user preference. *Journal of Nervous and Mental Disease*, 201(11), 991-995. doi:10.1097/NMD.0000000000000039
- Carter, R., Aldridge, S., Page, M., & Parker, S. (2009). *The Human Brain Book*. London, UK: DK Publishing.
- Center for Disease Control and Prevention. (2016, March 14). *Opioid Data Analysis*. Retrieved from <http://www.cdc.gov/drugoverdose/data/analysis.html>
- Chew, K.S. & McCleary, R. (1995). The spring peak in suicides: a cross-national analysis. *Social Science & Medicine*, 40, 223–230.,
- Christodoulou, C., Douzenis, A., Papadopoulos, F.C., Papadopoulou, A., Bouras, G., Gournellis, R., & Lykouras, L. (2012). Suicide and seasonality. *Acta Psychiatrica Scandinavica*, 125, 127-146.
- Cohn, E.G. & Rotton, J. (2005). The curve is still out there: A reply to Bushman, Wang, and Anderson's (2005) 'Is the curve relating temperature to aggression linear or curvilinear?' *Journal of Personality and Social Psychology*, 89(1), 67-70.
- Connolly, M. (2008). Here comes the rain again: Weather and the intertemporal substitution of leisure. *Journal of Labor Economics*, 26, 73-100.
- Connolly, M. (2013). Some like it mild and not too wet: The influence of weather on subjective well-being. *Journal of Happiness Studies*, 14, 457-473.

- Conner, T.S., Brookie, K.L., Richardson, A.C., & Polak, M.A. (2015). On carrots and curiosity: Eating fruit and vegetables is associated with greater flourishing in daily life. *British Journal of Health Psychology*, 20(2): 413 – 427. doi:10.1111/bjhp.12113
- Cooney, G. M., Dwan, K., Greig, C. A., Lawlor, D. A., Rimer, J., Waugh, F. R., ... & Mead, G. (2013). Exercise for depression. *The Cochrane Database of Systematic Reviews*, 9, 1-12.
- Cooper, M., Watson, J. C., & Hoeldampf, D. (2010). *Person-Centered and Experiential Therapies Work: A Review of The Research on Counseling, Psychotherapy And Related Practices*. Ross-on-Wye, UK: PCCS Books.
- Coryell, W., Endicott, J., & Keller, M. (1990). Outcome of patients with chronic affective disorder: A five-year follow-up. *American Journal of Psychiatry*, 147, 1627 – 1633.
- Craft, L. L., & Landers, D. M. (1998). The effect of exercise on clinical depression and depression resulting from mental illness: A meta-analysis. *Journal of Sport and Exercise Psychology*, 20(4), 339-357.
- Daley, A. (2008). Exercise and depression: A review of reviews. *Journal of Clinical Psychology in Medical Settings*, 15(2), 140-147. doi:10.1007/s10880-008-9105-z
- Danielsson, L., Noras, A. M., Waern, M., & Carlsson, J. (2013). Exercise in the treatment of major depression: A systematic review grading the quality of evidence. *Physiotherapy Theory and Practice*, 29(8), 573-585. doi:10.3109/09593985.2013.774452
- Dayer, L., Heldenbrand, S., Anderson, P., Gubbins, P. O., & Martin, B. C. (2013).

- Smartphone medication adherence apps: Potential benefits to patients and providers. *Journal of the American Pharmacists Association*, 53(2), 172–181.
doi: 10.1331/JAPhA.2013.12202
- Denissen, J.J.A., Butalid, L., Penke, L., & van Aken, M.A.G.. (2008). The effects of weather on daily mood: A multilevel approach. *Emotion*, 8(5), 662-667.
- Detre, T., Himmelhoch, J., Swartzburg, M., Anderson, C.M., Byck, R., & Kupfer, D.J. (1972). Hypersomnia and manic-depressive disease. *American Journal of Psychiatry* 128(10), 1303-305.
- Dickey M. *Anxiety Disorders*. Washington, DC: National Institute of Mental Health; 1997
- Does your insurance cover mental health services? (2017). *American Psychological Association*. Retrieved from <http://www.apa.org/helpcenter/parity-guide.aspx>
- Drevdahl D. (1999) Sailing beyond: nursing theory and the person. *Advances in Nursing Science*, 21(4), 1–13.
- Durkheim E. (1992). Suicide and fertility: a study of moral statistics. *European Journal of Population*, 8, 175–197.
- Eberth, J., & Sedlmeier, P. (2012). The effects of mindfulness meditation: A meta-analysis. *Mindfulness*, 3(3), 174-189. doi: 10.1007/s12671-012-0101-x
- Eisenberg, D., Kessler, R., Foster, C., Norlock, F., Calkins, D., & Delbanco, T. (1993). Unconventional medicine in the United States—prevalence, costs, and patterns of use. *New England Journal of Medicine*, 328 (4), 246–252.
- Evans, D.L., Charney, D.S., Lewis, L., Golden, R.N., Gorman, J.M., & Krishnan, K.R.R. (2005). Mood disorders in the medically ill: Scientific review and recommendations. *Biological Psychiatry*, 58, 175–189.

- Falconnier, L., & Elkin, I. (2008). Addressing economic stress in the treatment of depression. *American Journal of Orthopsychiatry*, 78(1), 37-46. doi: 10.1037/0002-9432.78.1.37
- Fardouly, J., Diedrichs, P. C., Vartanian, L. R., & Halliwell, E. (2015). Social comparisons on social media: The impact of facebook on young women's body image concerns and mood. *Body Image*, 13, 38-45. doi:10.1016/j.bodyim.2014.12.002
- Faust, V., Weidmann, M. & Wehner, W. (1974). The influence of meteorological factors on children and youths: A 10% random selection of 16,000 pupils and apprentices of Basle City (Switzerland). *Acta Paedopsychiatrica: International Journal of Child & Adolescent Psychiatry*, 40(4), 150-156.
- Fenkel, C. (2017). The power of an IRL community: Creating space for teens to unplug and engage. *US News: Health*. Retrieved from <https://health.usnews.com/health-care/for-better/articles/2017-10-11/the-power-of-an-irl-community-creating-space-for-teens-to-unplug-and-engage>
- Fern, Edward F. *Advanced Focus Group Research*. Thousand Oaks, CA: SAGE, 2001.
- Florence, C., Zhou, C., Luo, F., & Xu, L. (2016). Economic Burden of Prescription Opioid Misuse and Abuse. *JMCP Journal of Managed Care Pharmacy*, 15(7), 556-562. doi:10.18553/jmcp.2009.15.7.556
- Frank, E., Hlastala, S., Ritenour, A., Houck, P., Ming Tu, X., Monk, T.H., ... & Kupfer, T.J. (1997). Inducing lifestyle regularity in recovering bipolar disorder patients: Results from the maintenance therapies in bipolar disorder protocol. *Biological Psychiatry* 41(12), 1165-173.

- Gabbard, G.O. (2010). *Long-Term Psychodynamic Psychotherapy: A Basic Text*. Washington, DC: American Psychiatric Publishing, Inc.
- Gallagher, E.B., Wadsworth, A.L., & Stratton, T.D. (2002). Religion, spirituality and mental health. *Journal of Nervous and Mental Disease*, 190(10), 697-704. doi: 10.1097/00005053-200210000-00007
- Garvey, M. J., Mungas, D., & Tollefson, G. D. (1984). Hypersomnia in major depressive disorders. *Journal of Affective Disorders*, 6(3-4), 283-286. doi:10.1016/S0165-0327(84)80006
- Gibbard, I., & Hanley, T. (2008). A five-year evaluation of the effectiveness of person-centered counseling in routine clinical practice in primary care. *Counseling and Psychotherapy Research*, 8(4), 215-222.
- Gibbs, L., & Gambrill, E. (2002). Evidence-based practice: Counterarguments to objections. *Research on Social Work Practice*, 12(3), 452-476. doi:/10.1177/1049731502012003007
- Glaser, B.G., & Strauss, A.L. (1967). *The Discovery of Grounded Theory*. Chicago, IL: Aldine.
- Goldman, A.E., & McDonald, S.S. (1987). *The Group Depth Interview: Principles and Practice*. Englewood Cliffs, New Jersey: Prentice-Hall.
- Goddard, M. S. (2012). *Sleep quality, technostress, and maladaptive use of technology: Predictors of depression among college students* (Order No. AAI3497902). Retrieved from <https://proxy.library.upenn.edu/login?url=https://proxy.library.upenn.edu:2072/docview/1288996089?accountid=14707>
- Grant, B.F. (1995). Comorbidity between *DSM-IV* drug use disorders and major

- depression: Results of a national survey of adults. *Journal of Substance Abuse*. 7(4), 481- 497.
- Greenberg, L. (09/2012). *Handbook of Psychology: The Humanistic-Experiential Approach*. Chicago: Wiley.
- Greenberg PE, Sisitsky T, Kessler RC, Finkelstein SN, Berndt ER, Davidson JR, Ballenger JC, Fyer AJ (1999) The economic burden of anxiety disorders in the 1990s. *Journal of Clinical Psychiatry* 60, 427–435.
- Grensing-Pophal, L. (2002). Drowning in debt. *Credit Union Management*, 25, 42–45.
- Grohol, J. (2017). Symptoms & treatments of mental disorders. *Psych Central*. Retrieved from <https://psychcentral.com/disorders/>
- Gunnell, K. E., Flament, M. F., Buchholz, A., Henderson, K. A., Obeid, N., Schubert, N., & Goldfield, G. S. (2016). Examining the bidirectional relationship between physical activity, screen time, and symptoms of anxiety and depression over time during adolescence. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 88, 147-152. doi: 10.1016/j.ypmed.2016.04.002
- Haberstroh, S. (2009). Strategies and resources for conducting online counseling. *Journal of Professional Counseling: Practice, Theory, and Research*, 37, 1-20.
- Haggerty, J. (2016). Psychodynamic Therapy. *Psych Central*. Retrieved from <https://psychcentral.com/lib/psychodynamic-therapy/>
- Hallgren, M., Nakitanda, O. A., Ekblom, Ö., Herring, M. P., Owen, N., Dunstan, D., . . . Forsell, Y. (2016). Habitual physical activity levels predict treatment outcomes in depressed adults: A prospective cohort study. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 88, 53-58. doi: 10.1016/

j.ypmed.2016.03.021

Hasin, D.S., & Nunes, E. *Comorbidity of Alcohol, Drug and Psychiatric Disorders:*

Epidemiology. New York: Marsel Dekker.

Hawley P., Young S., Pasco A.C. (2000) Reductionism in the pursuit of nursing

science: In congruent with nursing's core values? *Canadian Journal of Nursing Research*, 23(2), 75–88.

Hefner, V., Dorros, S. M., Jourdain, N., Liu, C., Tortomasi, A., Greene, M. P., . . .

Bowles, N. (2016). Mobile exercising and tweeting the pounds away: The use of digital applications and microblogging and their association with disordered eating and compulsive exercise. *Cogent Social Sciences*, 2(1), 121-137.

doi:/10.1080/23311886.2016.1176304

Henderson, N. R. (2004). *Marketing Research: Same Frame, New Game* Chicago: The Association.

Hirschfield, R.H., Hasin, D., Keller, M., Endicott, J. & Wunder, J. Depression and

alcoholism: comorbidity in a longitudinal study. In J.D. Maser & C.R. Cloninger (Eds.), *Comorbidity of Mood and Anxiety Disorders*. Washington D.C.: American Psychiatric Press, pp. 293-303.

Hohagen, F., Rink, K., K  ppler, C., Schramm, E., Riemann, D., Weyerer, S., & Berger,

M. (1993). Prevalence and treatment of insomnia in general practice: A longitudinal study. *European Archives of Psychiatry and Clinical Neuroscience*, 242(6), 329-336. doi: 10.1007/BF02190245

Hsiang, SM, et al., (2013). Quantifying the influence of climate on human conflict.

Science, 13(341), 1235367. doi: 10.1126/science.1235367.

- Hsiao, K. (2017). Compulsive mobile application usage and technostress: The role of personality traits. *Online Information Review*, 41(2), 272-295. Retrieved from <https://proxy.library.upenn.edu/login?url=https://proxy.library.upenn.edu:2072/docview/1884815058?accountid=14707>
- Hubble, M. A., Duncan, B. L., & Miller, S. D. (Eds.). (1999). *The Heart and Soul of Change: What Works in Therapy*. Washington, DC: American Psychological Association.
- Huber, C. H. (1997). Time-limited counseling, invisible rationing, and informed consent. *The Family Journal*, 5(4), 325-327.
- Hakko, H., Rasanen, P., & Tiihonen, J. (1998). Seasonal variation in suicide occurrence in inland. *Acta Psychiatrica Scand*, 98, 92–97.
- Hardt, J. & Gerbershagen, H. U. (1999). No changes in mood with the seasons: Observations in 3000 chronic pain patients. *Acta Psychiatrica Scandinavica*, 100(4), 288-294.
- Howarth, E. & Hoffman, M.S. (1984). A multidimensional approach to the relationship between mood and weather. *British Journal of Psychology*, 75(1), 15-23.
- Institute of Medicine. (2006). *Improving the Quality of Health Care for Mental and Substance-Use Conditions* (Quality Chasm Series). Washington, DC: National Academies.
- Institute of Medicine. (2006). *Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem*. Washington, DC: The National Academies Press.
- Jankowski, K.S. (2014). The role of temperament in the relationship between morningness - eveningness and mood. *Chronobiology International*. 31, 114–122.

doi: 10.3109/07420528.2013.829845.

- Josefsson, T., Lindwall, M., & Archer, T. (2014). Physical exercise intervention in depressive disorders: Meta-analysis and systematic review. *Scandinavian Journal of Medicine and Science in Sports*, 24(2), 259-272. doi: 10.1111/sms.12050
- Kazantzis, N., & Deane, F. (1999). Psychologists' use of homework assignments in clinical practice. *Professional Psychology: Research and Practice*, 20, 581–585.
- Keller, Matthew C.; Fredrickson, Barbara L.; Ybarra, Oscar; Côté, Stéphane; Johnson, Kareem; Mikels, Joe; Conway, Anne; Wager, Tor; (2005). A Warm Heart and a Clear Head: The Contingent Effects of Weather on Mood and Cognition. *Psychological Science*, 16(9),724-731.
- Kessler, R. C., Akiskal, H. S., Ames, M., Birnbaum, H., Greenberg, P., & Hirschfeld, R. M. (2006). The prevalence and effects of mood disorders on work performance in a nationally representative sample of US workers. *American Journal of Psychiatry*, 163,1561–1568.
- Kessler, R. C., & Bromet, E. J. (2013). The epidemiology of depression across cultures. *Annual Review of Public Health*, 34, 119–138. doi.org/10.1146/annurev-publhealth-031912-114409
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., & Merikangas, K. R. (2003). The epidemiology of major depressive disorder. *JAMA*, 289, 3095–3105.
- Kessler, R.C., Nelson, C.B., McGonagle, K.A., Edlund, M.J., Frank, R.G., & Leaf, P.J. (1996). The epidemiology of co-occurring addictive and mental disorders. *American Journal of Orthopsychiatry*. 24(12), 6617- 31.
- Klimstra, T.A., Frijns, T., Keijsers, L., Denissen, J.J.A., Raaijmakers, Q.A.W., van Aken,

- M.A., ... & Winn, G.E. (2011). Come rain or come shine: Individual differences in how weather affects mood. *Emotion, 11*, 1495-1.
- Klontz, P.T., Kahler, R., & Klontz, B.T. (2006). *The Financial Wisdom of Ebenezer Scrooge: 5 Principles to Transform Your Relationship with Money*. Deerfield Beach, FL: Health Communications, Inc.
- Khoury, B., Lecomte, T., Fortin, G., Masse, M., Therien, P., Bouchard, V., Hofmann, S. G. (2013). Mindfulness-based therapy: A comprehensive meta-analysis. *Clinical Psychology Review, 33*(6), 763-771. doi: 10.1016/j.cpr.2013.05.005
- Kinder, G. (1999). *The Seven Stages of Money Maturity: Understanding the Spirit and Value of Money in Your Life*. New York, NY: Dell Publishing.
- Klainin-Yobas, P., Cho, M.A.A., & Creedy, D. (2012). Efficacy of mindfulness-based interventions on depressive symptoms among people with mental disorders: A meta-analysis. *International Journal of Nursing Studies, 49*(1), 109-121. doi: 10.1016/j.ijnurstu.2011.08.014
- Klontz, B. T., Bivens, A., Klontz, P. T., Wada, J., & Kahler, R. (2008). The treatment of disordered money behaviors: Results of an open clinical trial. *Psychological Services, 5*(3), 295-308. doi: 10.1037/1541-1559.5.3.295
- Kok, B. E., & Singer, T. (2017). Phenomenological fingerprints of four meditations: Differential state changes in affect, mind-wandering, meta-cognition, and interception before and after daily practice across 9 months of training. *Mindfulness, 8*(1), 218-231. doi: 10.1007/s12671-016-0594-9
- Koran, L. M., Faber, R. J., Aboujaoude, E., Large, M. D., & Serpe, R. T. (2006). Estimated prevalence of compulsive buying behavior in the United States. *The*

American Journal of Psychiatry, 163, 1806–1812.

Koskinen, O., Pukkila, K., Hakko, H., Tiihonen, J., Väisänen, E., Särkioja, T., Räsänen, P. (2002). Is occupation relevant in suicide? *Journal of Affect Disorders*, 70(2), 197-203.

Kranzler, H.R., Rounsaville, B., & Jeds, M. (1997). *Dual Diagnosis and Treatment: Substance Abuse and Comorbid Mental and Psychiatric Disorders*. New York, NY Marcel Dekker Inc.

Krause, N., Gina, J., & Liang, J. (1991). Financial strain and psychological well-being among the American and Japanese elderly. *Psychology and Aging*, 6, 170–181.

Krogh, J., Nordentoft, M., Sterne, J. A. C., & Lawlor, D. A. (2011). The effect of exercise in clinically depressed adults: Systematic review and meta-analysis of randomized controlled trials. *Journal of Clinical Psychiatry*, 72(4), 529-538.
doi:10.4088/JCP.08r04913blu

Krueger, R. A., & Casey, M. (2000). *Focus Groups: A Practical Guide for Applied Research*. Thousand Oaks: Sage Publications.

Kuo, Y.Y., & Srebalus, D. J. (2003). The development of a Web-based career counseling course. *Journal of Technology in Counseling*, 3(1). Retrieved from
http://jtc.colstate.edu/vol3_1/kuo/Kuo.htm

Lama, T. D. (2007). *Art of Happiness In/ Troubled World*. New York: Broadway Books.

Lai, J. S., Hiles, S., Bisquera, A., Hure, A. J., Mcevoy, M., & Attia, J. (2013). A systematic review and meta-analysis of dietary patterns and depression in community-dwelling adults. *American Journal of Clinical Nutrition*, 99(1), 181-197. doi:10.3945/ajcn.113.069880

- Lambert G, Reid C, Kaye D, Jennings G, Esler M. (2003). Increased suicide rate in the middle-aged and its association with hours of sunlight. *American Journal of Psychiatry*, 160, 793–795.
- Landry, S. (2008). Counselors, parents and technology. *Minnesota School Counselors Association: Guidelines*, 50, 2.
- Larivière, N., Desrosiers, J., Tousignant, M., & Boyer, R. (2011). Multifaceted impact evaluation of a day hospital compared to hospitalization on symptoms, social participation, service satisfaction and costs associated to service use. *International Journal of Psychiatry in Clinical Practice*, 15(3), 228-240. doi:2097/10.3109/13651501.2011.572170
- Leffel, J. (2010). *Modern technological implications in relation to feelings of interpersonal isolation in young adults* (Order No. AAI3388334). Available from PsycINFO. (754058302; 2010-99120-464). Retrieved from <https://proxy.library.upenn.edu/login?url=https://proxy.library.upenn.edu:2072/docview/754058302?accountid=14707>
- Li, I., Dey, A., & Forlizzi, J. (2010). *A Stage-Based Model of Personal Informatics Systems*. Paper presented at the Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, Atlanta, GA.
- Lilienfeld, S. O., Ritschel, L. A., Lynn, S. J., Cautin, R. L., & Latzman, R. D. (2013). Why many clinical psychologists are resistant to evidence-based practice: Root causes and constructive remedies. *Clinical Psychology Review*, 33(7), 883-900. doi:10.1016/j.cpr.2012.09.008
- Lin, L.Y., Sidani, J.E., Shensa, A., Radovic, A., Miller, E., Colditz, J.B., ... & Primack,

- B.A. (2016). Association between social media use and depression among U.S. young adults. *Depression and Anxiety*, 33(4), 323-331. doi:10.1002/da.22466
- Luxton, D. D., Hansen, R. N., & Stanfill, K. (2014). Mobile app self-care versus in-office care for stress reduction: A cost minimization analysis. *Journal of Telemedicine and Telecare*, 20(8), 431-435. doi: 10.1177/1357633X14555616
- Makris, G.D., Reutfors, J., Ösby, U., Isacson, G., Frangakis, C., Ekblom, A., & Papadopoulos, F. C. (2013). Suicide seasonality and antidepressants: A register-based study in Sweden. *Acta Psychiatrica Scandinavica*, 127, 117-125.
- Mallen, M. J., Vogel, D. L., & Rochlen, A. B. (2005). The practical aspects of online counseling: Ethics, training, technology, and competency. *Counseling Psychologist*, 33, 776-818.
- Maser, J., & Cloninger, C. (1990). *Comorbidity of Mood and Anxiety Disorders*. Washington, DC: American Psychiatric Press.
- Matthews, M., Volda, S., Abdullah, S., Doherty, G., Choudhury, T., Im, S., & Gay, G. (2015). *In Situ Design for Men- Tal Illness: Considering the Pathology of Bipolar Disorder in Mental Health Design*. Paper presented at the MobileHCI '15: 17th International Conference on Human-Computer Interaction with Mobile Devices and Services Proceedings, Copenhagen, Denmark.
- Martin, B. (2016). In-Depth: Cognitive Behavioral Therapy. *Psych Central*. Retrieved on from <https://psychcentral.com/lib/in-depth-cognitive-behavioral-therapy>
- McDermott, R. C., Schwartz, J. P., & Rislin, J. L. (2016). Men's mental health: A biopsychosocial critique. *Psychology of Men & Masculinity*, 18(3), 226-237.
- Medintz, S. (2004). Secrets, lies and money. *Money*, 34, 121–128.

- Mental Health: Research Findings. (2014). *Agency for Healthcare Research and Quality*. Retrieved from <http://www.ahrq.gov/research/findings/factsheets/mental/mentalth/index.html>
- Mendelson WB, Gillin JC, Wyatt RJ (1977) *Human Sleep and Its Disorders*. New York: Plenum Press.
- Merikangas, K., & Stevens, D.E. (1998). Substance abuse among women: familial factors and comorbidity. In Wetherington, C.L. & Roman, A.B. (Eds.), *Drug Addiction Research and Health of Women*. Bethesda, MD: National Institute on Drug Abuse, 245- 269
- Merikangas KR, He JP, Burstein M, Swanson SA, Avenevoli S, Cui L, Benjet C, Georgiades K, Swendsen J. (2010). Lifetime prevalence of mental disorders in U.S. adolescents: results from the National Comorbidity Survey Replication—Adolescent Supplement (NCS-A) *Journal of the American Academy of Child and Adolescent Psychiatry*, 49(10), 980–989.
- Merton, R. K. (1946). *Mass Persuasion*. New York: Harper.
- Merton, R. K. (1987). Public opinion quarterly (the): The focused interview and focus groups. continuities and discontinuities. *Public Opinion Quarterly*, 51(4), 550-566.
- Merton, R.K., Fiske, M., & Kendall, P.L. (1956) *The Focused Interview*, Glencoe, IL: Free Press.
- Michaelis, R., & Hoffman, E. (2003). Phenomenology and etiopathogenesis of hypersomnia in endogenous, phasic depressions. *The Nature of Sleep*, 89, 190-197.

- Moreno, J. L. (1957). *The First Book on Group Psychotherapy*. (3rd ed.), Oxford: Beacon House.
- Morgan, D. L. (1997). *Focus Groups as Qualitative Research*. Thousand Oaks: Sage Publications.
- Moskowitz, D. S., Russell, J. J., Sadikaj, G., & Sutton, R. (2009). Measuring people intensively. *Canadian Psychology/ Psychologie Canadienne*, 50, 131-140.
- Murray C.J., & Lopez A.D. (1996). *The Global Burden of Disease: A Comprehensive Assessment of Mortality and Disability from Diseases, Injuries, and Risk Factors in 1990 and Projected to 2020*. Cambridge, MA: Harvard University Press.
- Murray C.J., & Lopez A.D. (1996). Evidence-based health policy--lessons from the Global Burden of Disease Study. *Science*, 274, 740–743.
- National Association of Social Workers (NASW). (2017). *Technology in Social Work Practice*. Retrieved from https://www.socialworkers.org/includes/newIncludes/homepage/PRA-BRO-33617.TechStandards_FINAL_POSTING.pdf
- National Council for Behavioral Health. (2014). *Behavioral Health IT: The Foundation for Coordinated Care*. Retrieved from <http://www.thenationalcouncil.org/topics/behavioral-health-information-technology>
- Nykamp, K., Rosenthal, L., Folkerts, M., Roehrs, T., Guido. P., Roth, ... & Roehrs, G. (1998). The effects of REM sleep deprivation on the level of sleepiness / alertness. *Sleep*. 21 (6): 609–614.
- Oggins, J. (2003). Topics of marital disagreement among African-American and Euro-American newlyweds. *Psychological Reports*, 92, 417.
- O’Neil, A., Quirk, S.E., Housden, S., Brennan, S.L., Williams, L.J., Pasco, J.A., ... &

- Jacka, F.N. (2014). Relationship between diet and mental health in children and adolescents: A systematic review. *American Journal of Public Health, 104*(10), e31-e42. doi: 10.2105/AJPH.2014.302110.
- Padgett, D. (2017). *Qualitative Methods in Social Work Research*. Los Angeles: SAGE.
- Panek, E. T. (2013). Immediate media: How instant gratification, self-control, and the expansion of media choice affects our everyday lives. *American Psychologist Association*. Retrieved from https://my.apa.org/apa/idm/login.seam?ERIGHTS_paneket2013=http%3A%2F%2Fpsycnet.apa.org%2F
- Papadopoulos, F.C., Frangakis, C.E., Skalkidou, A., Petridou, E., Stevens, R.G., & Trichopoulos, D. (2005). Exploring lag and duration effect of sunshine in triggering suicide. *Journal of Affective Disorders, 88*, 287–297.
- Perloff, R. M. (2014). Social media effects on young women's body image concerns: Theoretical perspectives and an agenda for research. *Sex Roles, 71*(11-12), 363-377. doi:<http://proxy.library.upenn.edu:2155/10.1007/s11199-014-0384-6>
- Petridou, E., Papadopoulos, F.C., Frangakis, C.E., Skalkidou, A., & Trichopoulos, D. (2002). A role of sunshine in the triggering of suicide. *Epidemiology, 13*, 106–109.
- Price, R.H., Choi, J.N., & Vinokur, A.D. (2002). Links in the chain of adversity following job loss: How financial strain and loss of personal control lead to depression, impaired functioning, and poor health. *Journal of Occupational Health Psychology, 7*, 302–312.
- Primack, B.A., Swanier, B., Georgiopoulos, A.M., Land, S.R., & Fine, M.J. (2009).

- Association between media use in adolescence and depression in young adulthood. *Archives of General Psychiatry*, 66(2), 181. doi:10.1001/archgenpsychiatry.2008.532
- Psaltopoulou, T., Sergentanis, T. N., Panagiotakos, D. B., Sergentanis, I. N., Kosti, R., & Scarmeas, N. (2013). Mediterranean diet, stroke, cognitive impairment, and depression: A meta-analysis. *Annals of Neurology*, 74(4), 580-91. doi: 10.1002/ana.23944
- Rakel RE. (198). Differential diagnosis of anxiety. *Psychiatric Annals*, 11(suppl 11):11–14.
- Regier, D.A. & Narrow, W.E. (1990). The epidemiology of anxiety disorders: The Epidemiologic Catchment Area (ECA) experience. *DSJ Psychiatry Research*, 24(2), 3-14.
- Rawnsley M.M. (2000). Response to Reed's nursing reformation: historical and philosophic foundations. *Nursing Science Quarterly*, 13(2), 134–136.
- Reger, G.M., Hoffman, J., Riggs, D., Rothbaum, B.O., Ruzek, J., Holloway, K.M., & Kuhn, E. (2013). The ‘PE coach’ smartphone application: An innovative approach to improving implementation, fidelity, and homework adherence during prolonged exposure. *Psychological Services*, 10(3), 342-349. doi: 10.1037/a0032774
- Regier, D.A., Farmer, M.E., Rae, D.S., Locke, B.Z., Keith, S.J., Judd, L.L., & Goodwin, F.K. (1990). Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) study. *JAMA*, 264(19), 2511-2518.

- Rethorst, C.D., Wipfli, B.M., & Landers, D.M. (2009). The antidepressive effects of exercise: A meta-analysis of randomized trials. *Sports Medicine*, 39(6), 491-511. doi:10.2165/00007256-200939060-00004
- Reutfors, J., Osby, U., Ekbom, A., Nordstrom, P., Jokinen, J., & Papadopoulos, F.C. (2009). Seasonality of suicide in Sweden: relationship with psychiatric disorder. *Journal of Affective Disorders*, 119, 59–65.
- Richards, D., & Richardson, T. (2012). Computer-based psychological treatments for depression: A systematic review and meta-analysis. *Clinical Psychology Review*, 32(4), 329-342. doi:10.1016/j.cpr.2012.02.004
- Riemann, D., Berger, M., & Voderholzer, U., (2001). Sleep and depression - results from psychobiological studies: An overview. *Biological Psychology*, 57(1–3), 67 – 103. doi:10.1016/s0301-0511(01)00090-4
- Roche, M.J., Pincus, A.L., Rebar, A.L., Conroy, D.E., & Ram, N. (2014). Enriching psychological assessment using a person-specific analysis of interpersonal processes in daily life. *Assessment*, 21, 515-528.
- Rogers, C. (1951). *Client-Centered Psychotherapy*. Boston: Houghton-Mifflin.
- Rogers, C. (1957). The necessary and sufficient conditions of therapeutic personality change. *Journal of Consulting Psychology*, 21, 95–103.
- Rogers C.R. (1967). *On Becoming a Person: A Therapist's View of Psychotherapy*. London: Constable.
- Rogers, C. (1977). *Carl Rogers on Personal Power: Inner Strength and Its Revolutionary Impact*. New York: Delacorte Press.
- Rogers, C. (1980). *A Way of Being*. Boston: Houghton-Mifflin.

- Rook, D.W. (2003). *Marketing Research: Out-of-Focus Groups*. Chicago, IL: The Association.
- Rotton, J. & Cohn, E.G. (2004). Outdoor temperature, climate control and criminal assault: The spatial and temporal ecology of violence. *Environment and Behavior*, 36(2), 276-306.
- Sachse, R. & Elliott, R. (2002). Process-outcome research on humanistic therapy variables. In David J. Cain & Jules Seeman (Eds.) *Humanistic Psychotherapies: Handbook of Research and Practice*. Washington, DC: American Psychological Association.
- Sackett, D. L., & Rosenberg, W. M. (1995). On the need for evidence-based medicine. *Journal of Public Health*, 17, 330-334.
- SAMHSA's Concept of trauma and guidance for a trauma-informed approach. (2014). SAMHSA. Retrieved from <https://store.samhsa.gov/product/SAMHSA-s-Concept-of-Trauma-and-Guidance-for-a-Trauma-Informed-Approach/SMA14-4884>
- Sánchez-Villegas, A., Martínez-González, M.A., Estruch, R., Salas-Salvadó, J., Corella, D., Covas, M.I., & Serra-Majem, L. (2013). Mediterranean dietary pattern and depression: the PREDIMED randomized trial. *BMC Med*, 11(208). doi: 10.1186/1741-7015-11-208
- Schachner, D. A., Shaver, P. R., & Mikulincer, M. (2005). Patterns of nonverbal behavior and sensitivity in the context of attachment relationships. *Journal of Nonverbal Behaviors*, 29, 141–169.
- Schacter, D. L., & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: Remembering the past and imagining the future. *Philosophical*

Transactions of the Royal Society of London B, 362, 773–786.

Scheel, M.J., Hanson, W.E., & Razzhavaikina, T.I. (2004). The process of recommending homework in psychotherapy: A review of therapist delivery methods, client acceptability, and factors that affect compliance. *Psychotherapy: Theory, Research, Practice, Training*, 41(1), 38-55. doi:10.1037/0033-3204.41.1.38

Scheel, M. J., Hanson, W. E., & Razzhavaikina, T. I. (2004). The process of recommending homework in psychotherapy: A review of therapist delivery methods, client acceptability, and factors that affect compliance. *Psychotherapy: Theory, Research, Practice, Training*, 41(1), 38-55. doi:10.1037/0033-3204.41.1.38

Scheel, M. J., Hanson, W. E., & Razzhavaikina, T. I. (2004). The process of recommending homework in psychotherapy: a review of therapist delivery methods, client acceptability, and factors that affect compliance. *Psychotherapy: Theory, Research, Practice, Training*, 41(1), 38-55. doi:10.1037/0033-3204.41.1.38

Schore, A. N. (1994). *Affect Regulation and The Origin of The Self: The Neurobiology of Emotional Development*. Mahwah, NJ: Lawrence Erlbaum.

Schore, A. N. (2003a). *Affect Dysregulation and Disorders of The Self*. New York, NY: Norton.

Schore, A. N. (2003b). *Affect Regulation and The Repair of The Self*. New York, NY: Norton.

Schore, A. N. (2011). The right brain implicit self lies at the core of psychoanalysis. *Psychoanalytic Dialogues*, 21, 75–100.

- Schore, A. N. (2012). *The Science of The Art of Psychotherapy*. New York, NY: Norton.
- Schore, J. R., & Schore, A. N. (2008). Modern attachment theory: The central role of affect-regulation in development and treatment. *Clinical Social Work Journal*, 36, 9–20.
- Schore, J.R. (2012) Using concepts from interpersonal neurobiology in revisiting psychodynamic theory, *Smith College Studies in Social Work*, 82(1), 90-111, doi: 10.1080/00377317.2012.644494
- Schramm, E., Hohagen, F., Käppler, C., Grasshoff, U., & Berger, M. (1995). Mental comorbidity of chronic insomnia in general practice attenders using DSM-III—R. *Acta Psychiatrica Scandinavica*, 91(1), 10-17. doi: 10.1111/j.1600-0447.1995.tb09735.x
- Schuch, F.B., Deslandes, A.C., Stubbs, B., Gosmann, N.P., da Silva, C., & Tschiedel, B.F. (2016). Neurobiological effects of exercise on major depressive disorder: A systematic review. *Neuroscience and Biobehavioral Reviews*, 61, 1-11. doi: 10.1016/j.neubiorev.2015.11.012
- Scott, J., (2000). Predicting medication adherence in bipolar disorder. *Acta Neuropsychiatrica* 12, 128–130.
- Scott, J., 2002. Using health belief models to understand the efficacy– effectiveness gap for mood stabilizer treatments. *Neuropsychobiology* 46(Suppl. 1), 13–15.
- Scott, J., & Pope, M., 2002. Nonadherence with mood stabilizers: prevalence and predictor. *Journal of Clinical Psychiatry* 63, 384–390.
- Shedler, J. (2010). The efficacy of psychodynamic psychotherapy. *American Psychologist* 65(2): 98-109.

- Siegel, D. (2003). An interpersonal neurobiology of psychotherapy: The developing mind and the resolution of trauma. In M. Solomon & D. J. Siegel (Eds.), *Healing Trauma*. New York, NY: W. W. Norton.
- Silveira, H., Moraes, H., Oliveira, N., Coutinho, E. S. F., Laks, J., & Deslandes, A. (2013). Physical exercise and clinically depressed patients: A systematic review and meta-analysis. *Neuropsychobiology*, 67(2), 61-68. doi:10.1159/000345160
- Simpson, C. C., & Mazzeo, S. E. (2017). Calorie counting and fitness tracking technology: Associations with eating disorder symptomatology. *Eating Behaviors*, 26, 89-92. doi:10.1016/j.eatbeh.2017.02.002
- Skrabanek, P. (1994). *The Death of Humane Medicine and The Rise of Coercive Healthism*. S.I.: Social Affairs Unit.
- Smart, A. (2006). A multi-dimensional model of clinical utility. *International Journal for Quality in Health Care*, 18(5), 377-382. Doi: 10.1093/intqhc/mzl034.
- Smuts, J.C. (1927). *Holism and Evolution*. (2nd ed.). Chicago: Macmillan and Co.
- Stathopoulou, G., Powers, M.B., Berry, A.C., Smits, J. A.J., & Otto, M. W. (2006). Exercise interventions for mental health: A quantitative and qualitative review. *Clinical Psychology: Science and Practice*, 13(2), 179-193. doi:10.1111/j.1468-2850.2006.00021.x
- Stewart, D.W., Shamdasani, P. N., & Rook, D.W. (2007). *Focus groups: Theory and practice* (2nd ed.) Sage Publications, Inc, Thousand Oaks, CA.
- Stuhlmiller, C., & Tolchard, B. (2009). Computer-assisted CBT for depression and anxiety. *Journal of Psychosocial Nursing*, 47, 32-39.
- Stone, A.A., & Shiffman, S. (1994). Ecological momentary assessment (EMA) in

- behavioral medicine. *Annals of Behavioral Medicine*, 16, 199-202.
- Stone, A.A., Shiffman, S., Schwartz, J.E., Broderick, J.E., & Hufford, M.R. (2003). Patient compliance with paper and electronic diaries. *Controlled Clinical Trials*, 24, 182-199.
- Sultanoff, S. M. (1997). Treating the whole person: A holistic approach to psychotherapy. *The Humanistic Psychologist*, 25(2), 126-137. doi: 10.1080/08873267.1997.9986876
- Suplee, A. F. (2018). *An examination of social media and the tripartite influence model of body image disturbance* (Order No. AAI10193781). Available from PsycINFO. (1945236422; 2017-23162-083). Retrieved from <https://proxy.library.upenn.edu/login?url=https://proxy.library.upenn.edu:2072/docview/1945236422?accountid=14707>
- Svanun, S., & McAdoo, W.G. (1989). Predicting rapid relapse following treatment for chemical dependence: A matched-subjects design. *Journal of Consult Clinical Psychology*, 57, 222- 226.
- Swendson, J.D., & Merikangas, K.R. (2000). The comorbidity of depression and substance use disorders. *Clinical Psychology Review*, 20, 173- 189
- Swendsen, J., & Le Moal, M. (2011). Individual vulnerability to addiction. *Annals of the New York Academy of Sciences*, 1216(1), 73–85.
- Tatzel, M. (2002). Money worlds and well-being: An integration of money dispositions, materialism and price-related behavior. *Journal of Economic Psychology*, 23, 103–126.
- Thase, M.E., Himmelhoch, J.M., Mallinger, A.G., Jarrett, D.B., Kupfer, D.J. (1989).

- Sleep EEG and DST findings in anergic bipolar depression. *American Journal of Psychiatry*, 146(3), 329-333.
- Thorne SE. (2001). People and their parts: Deconstructing the debates in theorizing nursing's clients *Nursing Philosophy* 2, 259–262.
- Trull, T.J., & Ebner-Priemer, U. (2013). Ambulatory assessment. *Annual Review of Clinical Psychology*, 9, 151-176.
- US Department of Transportation. (2017). Drowsy driving. *National Highway Traffic Safety Administration*. Retrieved from https://www.nhtsa.gov/risky-driving/drowsy-drivingdrowsy_driving1/Drowsy.html#NCSDR/NHTSA
- Van Ameringen, M., Turna, J., Khalesi, Z., Pullia, K., & Patterson, B. (2017). There is an app for that! the current state of mobile applications (apps) for DSM-5 obsessive-compulsive disorder, posttraumatic stress disorder, anxiety and mood disorders. *Depression and Anxiety*, 34(6), 526-539. Doi: 10.1002/da.22657
- Verschuuren, G. (2017). *The Holism-Reductionism Debate: In Physics, Genetics, Biology, Neuroscience, Ecology, and Sociology*. Philadelphia: CreateSpace Publishing.
- Vollrath, M., Wicki, W., & Angst, J. (1989). The zurich study: VIII. insomnia: Association with depression, anxiety, somatic syndromes, and course of insomnia. *European Archives of Psychiatry & Neurological Sciences*, 239(2), 113-124. doi: 10.1007/BF01759584
- Warren, J.M. (2012). Mobile mind mapping: using mobile technology to enhance rational emotive behavior therapy. *Journal of Mental Health Counseling*, 34(1), 72.

- Watson, J. C. (2003). Computer-based supervision: Implementing computer technology in the delivery of counseling supervision. *Journal of Technology in Counseling*, 3(1), 159-168.
- American Holistic Health Association. (1995). Wellness from within: The first step. *American Holistic Health Association*. Retrieved from <https://ahha.org/what-is-ahha/>
- Wichers, M. (2014). The dynamic nature of depression: A new micro-level perspective of mental disorder that meets current challenges. *Psychological Medicine*, 44, 1349-1360.
- Wichers, M., Simons, C. J. P., Kramer, I. M. A., Hartmann, J. A., Lothmann, C., Myin-Germeys, I., ... & van Os, J. (2011). Momentary assessment technology as a tool to help. *Acta Psychiatr Scand*, 124(4), 262-72. doi: 10.1111/j.1600-0447.2011.01749.x
- Wu, X., Tao, S., Zhang, Y., Zhang, S., & Tao, F. (2015). Low physical activity and high screen time can increase the risks of mental health problems and poor sleep quality among Chinese college students. *PLoS ONE*, 10(3), e0119607. doi: 10.1371/journal.pone.0119607.
- Zaltman, G. (2004). How customers think: essential insights into the mind of the market. *Journal of Advertising Research*, 44(2), 216-218. doi:10.1017/s0021849904000145
- Zoogman, S., Goldberg, S. B., Hoyt, W. T., & Miller, L. (2015). Mindfulness interventions with youth: A meta-analysis. *Mindfulness*, 6(2), 290-302. doi: 10.1007/s12671-013-0260-4

Appendix A

Snowball Technique Personalized Email

To whom it may concern:

As you know, with the rise of managed mental health care, service delivery is now based on cost reduction rather than needs. Because of this, managed health care companies have made it their mission to only support treatment modalities which are evidence based. Consequently we, as masters prepared outpatient clinicians, are on the line for creating new and innovative treatment modalities utilizing research.

I know you are super busy but I was hoping you would be in one of my focus groups for my dissertation research, I would appreciate your feedback and opinion on this subject. The research is on the clinical utility of smart phone application interventions, focus groups are small, at Center for families (and I can give you a tour!), and a meal will be provided! Please follow this link to sign up as they are fast approaching!

<https://doodle.com/poll/kmpi36nzupausis3>

Appendix B
UNIVERSITY OF PENNSYLVANIA

RESEARCH SUBJECT
INFORMATION FORM

Protocol Title: Exploring the Clinical Utility of Mobile Applications for Promoting Affect Regulation among Clients with Behavioral Health Problems

Principal Investigator: *Caroline Fenkel MSS, LCSW*

Emergency Contact:

You are being invited to participate in a research study. The purpose of this study is to examine the clinical usefulness of incorporating client use of mobile applications into your psychotherapeutic practice. The study will be comprised of 32 masters prepared clinicians, each participant will have at least 2 years of experience working in outpatient psychotherapeutic settings. You are being asked to participate in one focus group that will last approximately 90 minutes. Participants will be asked to reflect on a series of question prompts in a group discussion.

We do not anticipate any risks to you from your participation in this study. Your participation in this study and the information generated from this research may further future exploration of ways in which technology can be incorporated into psychotherapeutic practice. Lunch will be provided either before or after the focus group. Participation in this research is completely voluntary. You can withdrawal from the study at any time. Any information shared in the focus groups will be confidential and your name will not be used in dissemination of study results. The focus groups will be audio taped and then professionally transcribed.

All study data will be stored in a secured fashion to protect your privacy. Audio tapes will be destroyed following completion of the study which is projected for December 2018. All paper or digital files generated from the study will not include your name or any identifying information.

If you have questions about your participation in this research study or about your rights as a research subject, make sure to discuss them with the study investigator or members of the study team. You may also call the Office of Regulatory Affairs at the University of Pennsylvania at (215) 898-2614 to talk about your rights as a research subject.

You will be asked to sign this form to show that

- the research study and the information above have been discussed with you
- you agree to participate in the study

You will receive a copy of this signed form and the summary of the study that will be discussed with you.

Subject's Name **[print]**

Subject's Signature

Date

Witness **[print]**

Witness' Signature

Date

Appendix C

Demographic & Information Questionnaire

Exploring the Clinical Utility of Mobile Applications for Promoting Affect Regulation among Clients with Behavioral Health Problems

Age: _____

Race: _____

Gender: _____

Type of Current Practice for Most of Your Work Week (*Circle One*):

Agency-based

Solo Private Practice

Group Private Practice

Are you credentialed with insurance companies? (*Circle One*) YES NO

Years of Post Masters Clinical Experience: _____

Years of Post Masters *Outpatient* Clinical Experience: _____

Current Size of Weekly Caseload (*number of clients, not number of sessions*):

Masters or Doctoral Degree (*MSW, PsyD, Counseling*): _____

Current Client Population (*Circle One*)

Children/Adolescents

Adults

Both

Do you use a smartphone? (*Circle One*) YES NO

What percentage of your clients use a smartphone? _____%

On a scale of 1 to 10, what is your level of comfort using a smart phone?
(10 Very Comfortable, 1 is Not Comfortable At All): _____

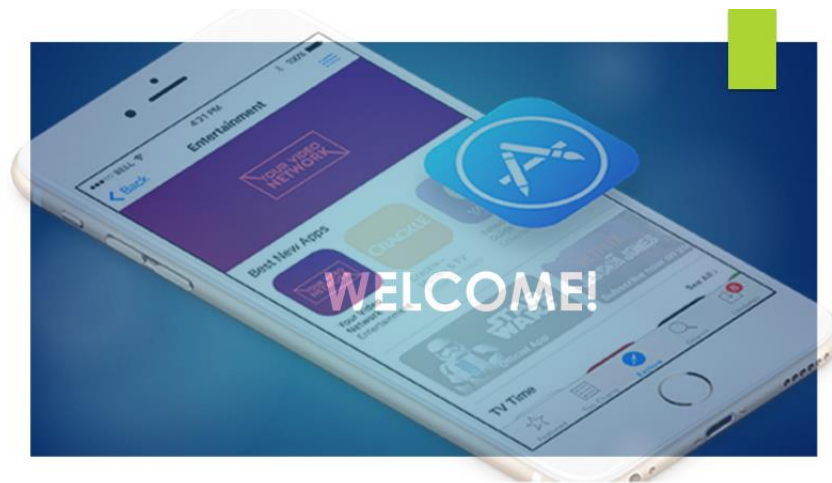
Appendix D

Welcome Statement

Hello and welcome, thank you so much for taking the time out of your busy life to participate in this much needed research study. The title of our project is exploring the clinical utility of mobile applications, for promoting affect regulation among clients with behavioral health problems. Technology has been steadily incorporated into a variety of clinical and medical settings and there is a growing trend for clients using smart phone applications to monitor aspects of affect regulation. Affect regulation is often assessed by the therapist's observation during psychotherapy sessions of a number of indicators of how feelings are modulated including the patient's relationship to sleep, hygiene, eating patterns, mood states, motivational capacity, and many others. To intervene, regardless of the therapist's theoretical orientation to treatment, all psychotherapies attempt to promote affect regulation through two primary mechanisms; 1.) transfer of skills for up and down regulating feelings and also 2.) in promoting strategies for observing one's ability to regulate affect. We are going to talk to you today about mobile applications, if they will be clinically useful for your psychotherapy practices. We are going to show you some examples, this is not an exhaustive list, it is just to orient you to the kinds of things we are trying to talk about.

Appendix E

Slides



- ▶ Please take a name tag
 - ▶ (first name only)
- ▶ Please fill out the demographics form
- ▶ Please read and sign the consent form



Welcome

Exploring the Clinical
Utility of Mobile
Applications for
Promoting Affect
Regulation Among Clients
with Behavioral Health
Problems



Affect Regulation

- ▶ Affect is a term to describe emotional processes within the body in reaction to a stressor or stimulus in the environment.
- ▶ One's ability to *regulate* affect, or to modulate emotional states (e.g. increase feelings, or decrease feelings) is in part wired in childhood through interactions with attachment figures.
- ▶ As an outcome of attachment, affect regulation is foundational to creating a healthy, sustainable and well-adjusted lifestyle. Mood, anxiety and substance abuse disorders are essentially the presentation of dysregulated affect through observable symptoms such as depressed mood or social isolation.
- ▶ Some symptoms of these disorders, in particular substance abuse, are strategies developed to modulate dysregulated emotions. However, these symptoms while helping to avoid, increase or decrease feelings, further limit functioning.

Affect Regulation

- ▶ Affect regulation is often assessed by the therapist's observation during psychotherapy sessions of a number of indicators of how feelings are modulated including the patient's relationship to sleep, hygiene, eating patterns, mood states, motivational capacity, and many others.
- ▶ To intervene, regardless of the therapist's theoretical orientation to treatment, all psychotherapies attempt to promote affect regulation through two primary mechanisms
 - ▶ 1. In promoting strategies for observing one's ability to regulate affect.
 - ▶ 2. Transfer of skills for up and down regulating feelings

Affect Regulation and Technology



- ▶ Attention to regulatory capacity is central to many emerging self-help technologies involving smart phone applications, or monitoring devices such as fitness trackers.
- ▶ A host of these technologies observe, track, and offer strategies for regulating feelings through
 - ▶ Sleep
 - ▶ Exercise
 - ▶ Nutrition
 - ▶ Alcohol Use
 - ▶ and many others

Clinical Utility

- ▶ Clinical utility is a concept recently further developed by Smart (2006) which examines any novel intervention or innovation through a multi-dimensional lens.
- ▶ The model evaluates four factors using expert clinical opinion:
 - ▶ Appropriateness
 - ▶ Accessibility
 - ▶ Practicability
 - ▶ Acceptability
- ▶ These components are essential for clinicians to adopt any new modality. Without clear clinical utility, there is no incentive for clinicians to integrate the intervention into their practice.



Research Purpose

- ▶ Examine clinicians' perspectives on the clinical utility of incorporating existing mobile smart phone technologies into psychotherapeutic treatment with persons with behavioral health conditions for enhancing affect regulation.



Affect Regulatory Markers

- ▶ Examples
 - ▶ Sleep
 - ▶ Physical activity
 - ▶ Alcohol consumption
 - ▶ Social media consumption
 - ▶ Medication compliance



Focus Group Format

1. We are going to verbalize a question and put it on the power point
2. Our goal is to encourage an open discussion amongst members
3. Feel free to talk together as we just want to listen to your opinion and feedback



Question #1

First we would like you to talk about your clients use of these kinds of mobile applications. If you have examples, you can talk about those now.



Question #2

Tell me about the ways these technologies have been incorporated into your psychotherapy practice, this can include discussions with clients who have talked about their use of applications, or ways that you have suggested the use of application



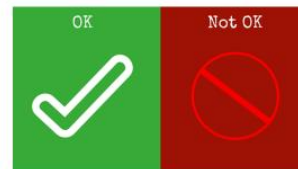
Question #3

- ▶ Tell me about your thoughts on how smartphone applications might accomplish the goal in tracking affect regulatory markers to help in turn, create skill transfer and self-observe?
- ▶ For those of you who have not used these applications what do you think the capacity of utilizing them in psychotherapy is for teaching skills or observation of the self



Question #4

- ▶ In your opinion, how is it appropriate or inappropriate to use these smart phone technologies as a means to help clients self-observe their affect regulation and skill transfer for emotional regulation?
- ▶ Are there any moral or ethical questions or objections to this technology?



Question #5

Tell me about the knowledge of, and access to these technologies among your clients. Talk about what barriers stand in their way of accessing these technologies?



Question #6

Tell me about the knowledge of, and access to these technologies for you, the clinician. Talk about what barriers stand in your way of accessing these technologies?



Wrap Up

Is there anything that you would like to say and haven't mentioned let's take some time to do that now.

Thank You!

Please enjoy some food!